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VETERINARY MEDICINE

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By A. T. KINSLEY

Swine Plague, "Flu" or Anaphylaxis?
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Veterinary Medicine

Vol. XVI JULY, 1921 Number 7

Editorial Comment

LEGISLATION INIMICAL TO VETERINARIANS.

THE bill known as the "Cessna Bill" (Senate File No. 448) which was passed and became a law on April 18, 1921, originally contained clauses that threatened the very existence of Iowa veterinarians; in fact, would have surrounded the use of biological products, including anti-tetanic serum, with so much red tape and danger to the one administering or prescribing them as to make their use almost prohibitive. However, as amended and passed, it has had some of its fangs drawn, but still retains many objectional and vicious features.

The law is so important to Iowa veterinarians that we deem it a duty to publish the bill in full as it was finally passed, so that each one may read and study it for himself and thus avoid its pitfalls. It also should serve to put the veterinarians of other states on their guard to watch for legislation of a similar type.

As we see it, the hope of the Iowa veterinarian lies in the possibility that the farmer or swine breeder and feeder will show more sense than the legislators who voted for the act and that so few will avail themselves of the dangerous opportunity to use hog-cholera virus that the measure will die a natural death.

We think that if the law was contested in court it would be found unconstitutional, especially that part which practically prohibits a veterinarian from making a profit on serum and virus. This to us is clearly "class legislation," as we opine that there is no other class of merchandise handlers or dealers in the state of Iowa prohibited from making a profit on their merchandise. Fancy a law which would prevent clothing dealers, grocerymen or other merchants from making a profit on their wares, permitting them merely to make a slight charge for their service in selling the goods unless with each sale the customer was told in writing just what the merchandise cost and just what the customer would have to pay for it. Think of a large retail store being forced to do considerable writing with each sale.

No large merchandise establishment could exist under such a law. It would necessitate the employment of so much help and it would so slow up their sales as to make their continuance in business impossible. By the same token, why should the veterinarian be forced to comply with such a law, for, when he sells serum or virus he is selling merchandise? Why the law for one and not the other? Is that not "class legislation" or a class law? We think so.

Think of the accommodating farmer or swine owner or he of the "smart aleck" type who holds a permit to vaccinate his own swine, refusing in every case to accommodate a neighbor by vaccinating the neighbor's swine.

No one has yet succeeded in making "a silk purse out of a sow's ear" and we wonder in amazement by what process of thinking (?) those Iowa legislators believed that by a "twist of the wrist" they could turn a farmer or swine owner into a doctor.

When one thinks of the great amount of collateral knowledge necessary for the safe and proper handling and administration of hog-cholera virus, it is impossible to believe that by a few hour's instruction the swine owner can be given the ability of judgment for such procedure.

Should the swine owner avail himself to any extent of his newly given privilege by this erratic act of legislation, Iowa will be overrun with hog cholera and its great swine industry destroyed within ten years.

The bill as amended and passed is given below:

An act to repeal sections one (1) to five (5) inclusive of chapter three hundred seventy-nine (379) acts of the Thirty-eighth (38th) General Assembly (C. C. Secs. 1778 to 1783, inclusive), and to enact substitutes therefor regulating and licensing the manufacture, sale and use of hog-cholera virus, and anti-hog-cholera serum and other biological products for use upon domestic animals and providing penalties for violation of the provisions of this act.

Section 1. It shall be the duty of the commission of animal health and it shall have the power and authority to make and promulgate such rules and regulations governing the manufacture, sale and distribution of hog-cholera serum, virus and other biological products for use upon domestic animals, as it deems necessary to maintain the potency and purity of such serum, virus and biological products.

Sec. 2. Whenever used in this act the word "commission" shall refer to the Commission of Animal Health; the word "person" shall include individuals, firms, partnerships, companies and corporations; the words "biological products" shall include and refer to hog-cholera serum and virus; the word "manufacturer" shall include all persons engaged in the preparation of biological products as construed by this state at any stage of the process; except those engaged under the provision of sections (2523-w) to (2538-w2) inclusive, of supplemental to the Code 1915 (C. C. Secs. 2422, 2423, 2424), or in any other state or governmental institution; the word "dealer" shall include any person engaged in the sale, dispensation, or other distribution for profit, or who shall offer for sale, dispensation, or other distribution for profit biological products whether as principal or agent, other than manufacturers, provided that a regularly licensed veterinarian who has in his possession biological products for use in the practice of his profession, but not for sale to other veterinarians or permit holders shall not be considered a dealer as herein defined.

Sec. 3. No person shall manufacture, sell, offer for sale or otherwise distribute within this state any biological products unless he shall have been granted by permission to manufacture or sell such products by the commission, upon application as provided in this act.

Sec. 4. Application for permission to manufacture, sell or otherwise distribute biological products shall be made, by any person desiring to manufacture, sell, or otherwise distribute such products, which application shall give the applicant's name, his place of business, and such other information as may be required by the commission.

Sec. 5. Application to manufacture biological products shall be accompanied by evidence satisfactory to the commission that the applicant is holder of a valid and unrevoked United States Government license for the manufacture and sale of biological products and was such holder at the time the same biological products were made.

Sec. 6. Application for dealer's permit shall be accompanied by an undertaking on the part of the applicant faithfully to comply with the law governing the warehousing, handling, sale and distribution of biological products and the rules and regulations of the commission promulgated thereunder, and by a bond in the penal sum of $5,000, to be approved by the commission for the use and benefit of all persons using the biological products sold by the permit holder, who may be damaged by reason of his negligence in the warehousing, handling or distribution of such products, and for the use and benefit of the state for all penalties adjudged against the principal thereon in any actions instituted in the name of the state.

Sec. 7. The provision of the preceding section shall be construed only to limit the liability of the surety upon the respective bonds, and any party damaged by the negligence of the principal thereon may recover damages to the full amount suffered by such injured party by reason of negligence of the dealer in the discharge of any of the duties imposed by this act or by the rules promulgated by the commission thereunder or in the warehousing, handling or distribution, as the case may be, of such biological products, and in the event of judgment being obtained upon any bond provided in this act the commission may immediately revoke the permit issued, if in its judgment the conditions warrant such revocation, and shall in any event require a further bond the amount of the penalty upon which shall be such as to afford the same security to all persons entitled thereto as is provided in bonds originally filed, and upon failure to furnish such additional bond the said permit shall be thereby revoked without further action by the commission.

Sec. 8. Any party damaged by the negligence of a manufacturer may recover damages to the full amount suffered by such injured party, by reason of negligence of such manufacturer in the discharge of any duties imposed by this act or by the rules promulgated by the commission thereunder or in the manufacture, warehousing, handling or distribution, as the case may be, of such biological products.

Sec. 9. Before the issuance of an original permit to any manufacturer or dealer the commission may cause the premises upon which it is purposed to manufacture or sell biological products to be inspected, and shall make such requirements regarding the physical condition and sanitation of such premises as in its judgment are necessary to insure the maintenance of the potency and purity of the said products; provided, that such inspection shall be made of all such plants and agencies prior to the renewal after the passage of this act of permits heretofore issued, and such premises shall be subject to inspection at such time and in such manner as the commission may consider proper and necessary to insure compliance with its rules and regulations and the statutes relative thereto.

Sec. 10. A fee of $25 shall accompany applications for manufacturer's permit for each plant where it is proposed to manufacture biological products, and a fee of $15 shall accompany applications for dealer's permit for each warehouse or distributing agency it is proposed to maintain. All permits shall be valid for one year from the date of issuance and renewals thereof shall be subject to like conditions, including fees as are imposed in the case of original permits.

Sec. 11. All permit holders shall make such written report to the commission as it may

from time to time require.

Sec. 13. No biological products shall be sold or otherwise distributed, or offered for sale or other distribution, or be used in this state except such as have been produced at a plant holding a United States government license for the manufacture of biological products or of such of said products as are offered for sale, distribution or use, at the time said products are made.

Sec. 14. No person shall sell, offer for sale or otherwise distribute or offer for distribution virulent blood or virus from cholera-infected hogs other than to holders of valid permits to use the same.

Sec. 15. Written permits to administer virulent blood or virus from cholera-infected hogs shall be issued by the commission only to such persons as present satisfactory evidence that they are qualified to administer the same. Such permits may be canceled by the commission upon it appearing that the holder thereof is no longer a proper person to administer such virulent blood or virus. No person shall administer such virulent blood or virus unless he is the holder of a valid unrevoked permit, and manufacturers and dealers shall sell to all permit holders without discriminating as to the price of products.

Sec. 16. Provisions shall be made by the state veterinarian for instruction in the use of serum and virus in each county not oftener than once each year, and he is hereby authorized and directed to make all necessary arrangements for such instruction, at a convenient time and place, when there are seven or more applicants, who are residents of the county, for such instruction. Persons who desire to avail themselves of such courses of instruction shall make application to the county agent accompanied by a fee of $5.

Sec. 17. The county agent shall forward such applications and fees to the state veterinarian, who shall notify the extension department of the Iowa State College of Agriculture and Mechanic Arts at Ames, and said department shall within 30 days send competent instructors to such county to hold a school of instructions. Such instructor or instructors shall give all instructions and demonstrations necessary, and conduct examinations and forward his report to the commission immediately. Upon receiving such report, it shall be the duty of the commission to issue permits to those instructed as provided in section 15 of this act. Such permits shall allow the applicant to use virulent blood or virus upon animals owned by himself. The compensation of the instructors and other expenses connected with such instructions, shall be paid out of the fees received from applicants, and any surplus shall be paid into the funds of the commission.

Sec. 18. The animal health commission may hold such schools of instruction at Ames at such times as they deem proper, and shall hold the same upon the application of ten or more for such schools and at such schools no fees shall be charged and permits shall be granted to applicants as provided in Section 17, and shall hold two stated schools each year on the first Monday of January and August respectively.

Sec. 19. The commission, or its duly authorized deputies, assistants, or agents may seize, at any time or place, for examination samples of biological products manufactured or kept for use or sale within the state.

Sec. 20. The commission shall have power to seize, condemn or destroy any biological products which it deems unsafe.

Sec. 21. No person shall remove or deface any label upon the bottles or packages containing any biological product, or change the contents from the original container except for immediate use.

Sec. 22. The examination of applicants provided for in Section 16 hereof, shall be in addition to the examination of applicants for permits made at the Iowa State College of Agriculture and Mechanic Arts.

Sec. 23. It shall be unlawful for any person, firm, company or corporation authorized under this act to manufacture, sell or distribute serum or virulent blood or virus to grant any rebate, either directly or indirectly, to any person or to sell said products at any other than a uniform price to all persons, and any person, firm, company or corporation violating the provisions of this section shall forfeit their license to manufacture or sell such products and the same shall not be renewed for a period of one year.

Sec. 24. Any regularly licensed veterinarian who shall receive or collect, directly or indirectly, any rebate or commission or compensation for the handling and sale or use of any hog cholera serum or virus other than his charges for services rendered in administering the same,unless said amount if requested is made known to the customer using the same in writing, shall forfeit his license as a veterinarian, and the same shall not be renewed for a period of one year.

Sec. 25. It shall be unlawful for any person, firm, company or corporation licensed as herein provided to manufacture, sell or distribute hog-cholera serum or virus, directly or indirectly, by their agents or employes or any representative, to solicit or attempt to induce farmers or others to make application for examination as provided in Section 16 hereof, or to in any way assist or be interested in procuring applicants for permits as herein provided. Any such firm, person, company or corporation violating the provisions of this section, shall forfeit their license granted under this act.

Sec. 26. Any person who shall violate any of the preceding provisions of this act, or any of the rules of the commission legally promulgated, or who shall hinder or attempt to hinder the commission or any duly authorized agent or official thereof in the discharge of his duty,shall be fined in a sum not less than $100 nor more than $500, or in default thereof shall be imprisoned not less than 30 nor more than 150 days.

"Loin Disease" or Lumbar Paralysis

By Dr. A. T. KINSLEY.

"LOIN DISEASE" is the name of a condition or disease of cattle occurring in the central region of Texas, and is characterized in the beginning by disturbances of locomotion. The affected animals soon go down and remain in the decubital position until death.

The origin of this disease is unknown. Cattlemen do not all agree on the time that this condition first occurred. According to the reports of apparently reliable men, typical cases of "loin disease" occurred in 1900 or at an earlier date. Other men that have been continuously engaged in the cattle business on an extensive scale maintain that this condition first appeared in their herds in 1918 or 1919. It is possible that the confusion as to the occurrence of this disease has been due to the fact that such diseases as tick fever, anthrax and some other diseases were not identified by the ranchers as distinct maladies. There is practically no literature pertaining to "loin disease," or at least the writer has failed to find references to this condition.

This disease is more or less prevalent in the coastal region of Texas. A comprehensive survey of the area in which the disease occurs has not been made, but from reports it appears that it extends from the coast for at least 100 miles inland. Thus a strip about 100 miles wide parallel to the coast roughly outlines the section in which this disease occurs. A large portion of the region in which this condition occurs is flat prairie. There are some streams of water flowing through this prairie country and there are bayous projecting variable distances inland. The creeks and rivers are all fresh water. The bayous contain salt water for variable distances from the gulf. Timber occurs practically only along the bayous and streams of water.

The elevation of this prairie land varies from sea level to less than 100 feet. Most of the prairie land is flat and is not well drained excepting where it has been properly ditched. There are many bogs or swamps of variable size in some, if not all, sections where the disease occurs.

Alkali spots are quite prevalent in some locations. Several grasses appear to grow in abundance and there are many different kinds of weeds and shrubs. The disease has been observed in cattle on open range, as well as in those in pastures. There have been few, if any, cases occur in dairy or other cattle that are fed small quantities of cotton seed cake or other feed, although they may be in actual contact while grazing with cattle that are not fed and in which extensive losses occur. In some pastures in which many cases have occurred the cattle have access to well water

Fig. 1.—A Brahma Hereford grade cow. She was down and got up with difficulty when approached. Six hours later she was lying on sternum, but could not get up. She was destroyed and autopsied 24 hours after the above photograph was taken.

although practically all pastures and ranges contain ponds and bogs, this water being accessible and many cattle drink freely of it. Three samples of pond water were analyzed chemically and excepting for excessive quantities of silicates it contained no injurious materials.

This condition does not occur, or at least its occurrence has not been reported, in timber pastures or river-bottom pastures.

So far as has been determined, recently shipped-in cattle do not become affected for at least one year, and then they are as subject to

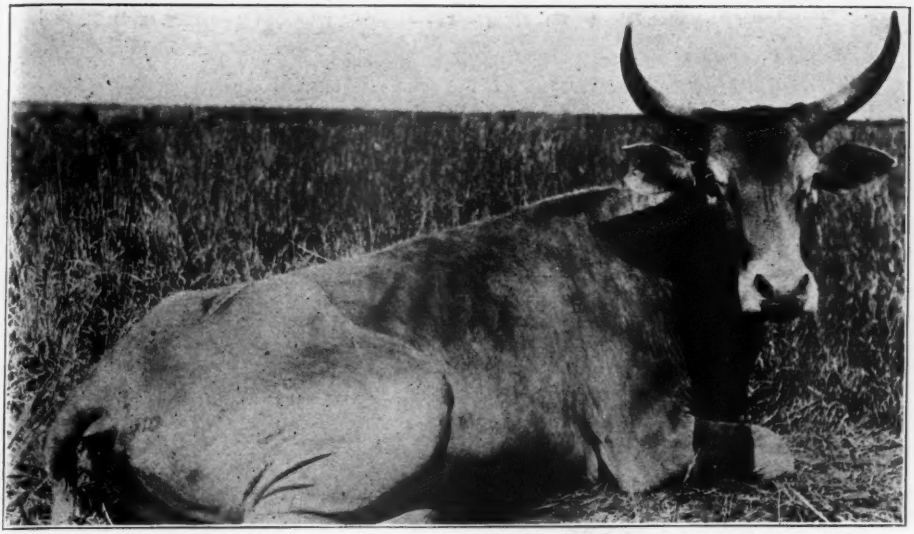


Fig. 2.—Brahma grade cow unable to get up, showing common attitude of resting on sternum. This cow responded to reflexes in the hind legs.

the disease as are the natives. In several instances the disease has been checked and in some cases no further losses occurred after the cattle had been driven on to a different range or changed to another pasture. Sometimes the change of pasture only temporarily protects from further losses. If cattle in which losses have occurred are moved to river bottom or timber pastures the losses may continue for 7 to 10 days, after which no further losses occur. It is not unusual to find extensive losses of cattle from this disease in one

Fig. 3.—Same cow as in Fig. 2, 24 hours later, showing more general depression and relaxation of muscles, particularly of the hind legs.

pasture and no losses in the same class of cattle in an adjoining pasture in which the food and water is apparently identical.

Although there is about the usual traffic in cattle in to and from the area in which this disease occurs, thus far there has been no case of "loin disease" reported in any other locality. One cattleman reported an interesting occurrence as follows: He and his son had a herd of cattle in the coastal area and the son had lost several with the loin disease, but the disease had not occurred in the father's herd; both herds were shipped to the coast, no attempt being made to keep the two herds separated. After reaching the destination there were no further losses in the son's herd but the father lost about 10 percent of his cattle with "loin disease." This incident would indicate infection; however, anthrax or tick fever may have been the cause of the losses after shipment.

"Loin disease" is apparently a disease of mature animals. The section of country in which the disease has been investigated is essentially a cow country and consequently the majority of cases observed were cows, although steers and bulls are subject to the disease. Schmidt reported the disease in one yearling but it is unusual for the disease to occur in animals under 2 years of age. Animals in prime condition are most frequently affected; in fact, it is the exception to find a poor or unthrifty animal affected. Cows with calves by their sides, dry cows and springers appear to be equally susceptible. Breed does not appear to be a factor in the susceptibility to the disease as natives, Brahmas, Herefords, Jerseys and Grades of all breeds become affected.

Etiology—The cause of "loin disease" is not known, although many investigations have been made to determine the causative factor.

Fig. 4.—Same cow as in Figs. 2 and 3, 24 hours after photograph for Fig 3 was taken, showing the milk fever attitude. The paralysis had progressed and involved the muscles of the neck. Special senses only slightly depressed; cow drank some water; passages from bowel normal; temperature normal.

The fact that Brahma cattle were imported from an area in which Surra abounds, suggests the possibility of Surra but the fact that horses and mules are not effected and the failure to transmit the disease to other cattle, and to rabbits by inoculation, would appear to eliminate the trypanosoma evansi as a causative factor.

The coffee bean, of which there are several varieties, is very plantiful and at least one species—the square pod (Daubentonia longifolia)—has been demonstrated to be poisonous to sheep and goats. The symptoms of poisoning from this bean are distinctly different than the symptoms of "loin disease." Coffee beans are found in all pastures, prairie, timber land and river bottom, but loin disease does not

Fig. 5.—Photograph of same cow taken a few hours after photograph Fig. 4 was taken, showing more depression and more pronounced paralysis of the cervical muscles.

occur in all pastures. This plant has been sufficiently important that feeding experiments of small animals are being conducted.

Deficiency of some element or elements has been considered as a possible factor in the production of the disease, however, in most deficiency diseases the affected animals are not in prime condition, whereas "loin disease" invariably affects fat animals that are in prime condition.

The cause may be an infection, however, the disease has not occurred out of the coastal area

Fig. 6.—Same case 24 hours after photograph for Fig. 5 was taken, showing complete paralysis of voluntary muscles. Special senses still active. Cow swallowed quantities of water when it was poured into her mouth from a bottle. There was normal action from bowel and bladder. This cow was destroyed 24 hours later.

of Texas and there have been more or less cattle shipments to all other sections of the country and yet the disease has not occurred elsewhere. Several cow men have shipped or trailed their herds, after sustaining heavy losses from this disease, to other sections of the country, or into timber pasture or river bottom land in the coastal area and no new cases develop in their herds after 10 days and the disease was not transmitted to the cattle in the new locations. An occasional animal recovers but the attack does not produce an immunity as these animals become affected and usually die promptly. These facts are not in accord with the usual infections; however, bacteriologic investigation is being conducted to identify, if possible, any microbian agents that may have a casual relation to the disease.

Fig. 7.—A 22-months-old grade Jersey that had been down several days. She was eating and drinking, and would probably recover. This attitude is characteristic in the earlier stages of the disease. This heifer was unable to move her tail. Reflexes of skin irritation of the hind legs were normal.

Symptoms—There is usually a slight indisposition, which will not be observed except by the experienced cattle man, soon after which there is inco-ordination evidenced by a staggering gait. The period of uncertain gait may be of short duration or it may continue for from one to four days; in fact, there are reasons for believing that some mild cases may recover after a few days having evidenced symptoms only of dullness and inco-ordination. In the more severe form inco-ordination becomes so marked that the animals lose control and fall to the ground or they may lie down. The majority of cases are unable to get up after they assume the decubital position.

There is no movement of the tail and there are large numbers of flies on the affected animals. The affected animals will remain upon the sternum and on a casual examination appear to be resting normally. The loin muscles are apparently involved as the affected animal can move the hind legs. Sensory nerves are not affected as there is normal respones to the prick of a pin. As the disease progresses the motor paralysis extends forward and involves the muscles of the neck and the animal during this stage has the head thrown around to the side and is a typical picture of parturient paresis. In the later stages the animal lies on the side and there may be constant movement of the feet.

There is cessation of rumination and there is inappetence in the early stages in mild cases and throughout the attack in fatal cases. The affected animal will drink varying quantities of water and there is perfect control of the muscles involved in swallowing until the animal dies.

Peristalsis is practically normal and there is normal defecation until the intestine is emptied.

Fig. 8.—This cow apparently had a mild attack of the disease. She was one of two cases observed in which the affected animals were in poor condition. When walking she showed the uncertain wabbling gait. This cow recovered and went back onto the range. Note Dr. B. A. Taylor of Houston, Tex., in the background.

Purgatives produce action in the normal time in these cases.

Respiration and the pulse rate are practically normal. Temperature is normal or subnormal.

The conjunctival mucosa is usually con-

Fig. 9.—A 3-year-old steer that became affected May 1, 1921, and was helped up on May 14, when the above photograph was taken. He made a complete recovery and went back onto the range May 25. Photo by Dr. Beck.

gested and there may be a purulent discharge. This condition may be due to irritation by flies. Some cases show a distinct lachrymation. The contractility of the pupil remains normal throughout the attack.

In some cases there is a relaxation of the sphincter muscle of the bladder, resulting in constant dribbling of the urine.

Opisthotonos occurs in some cases, but is not a constant symptom.

Lesions—On autopsy the striking thing is the general absence of lesions. Because of the decumbent position, bruises and bed sores, in cases that have been down for several days, occur. The rumen is full and the intestine empty. There may or may not be irregular hyperemic areas of the mucosa of the abomasum, small and large intestine. The gall bladder is enlarged from three to five times the normal size in practically all cases. Hyperemia and hemorrhages may be present in various lymph glands. Petechial hemorrhage may occur in the heart but is not a constant lesion. No abnormality has been observed in the brain or spinal cord. In fact, no definite characteristic lesion occurs with the possible exception of the enlarged gall bladder and the investigation thus far has not revealed the significance of this lesion.

Only preliminary studies of the micropathology of this disease have been made but no lesions have been observed.

Course—The course of the disease varies from 24 hours to 4 or 5 days, in the majority of cases. Some few cases will live for 20 days or even longer. A very small percent recover.

Investigation of the foregoing disease is now underway by the Live Stock Sanitary Commission of Texas, co-operating with the various departments of the A. & M. College and Experiment Station, the local representatives of the B. A. I. that are located at Houston, the county officials of Harris county, Texas, the city laboratories of Houston and the various cattlemen in and around Houston, and further information relative to this disease no doubt will soon be forthcoming from these and other sources.

Swine Plague, "Flu" or Anaphylaxis?

By ROBERT JAY, Nashville, Tenn.

SWINE plague is an old term used in Europe to designate a highly contagious disease of swine which wrought great losses. The term "hog cholera" was given to the condition in this country. Drs. Salmon and Smith in their endeavor to determine the cause of hog cholera found an organism that was associated with intestinal lesions of this disease, and they gave it the name of suipestifer. They also found an organism in the blood and lungs of cholera hogs showing pulmonary complications, which they gave the name of suisepticus and designated that condition as swine plague. These organisms were accepted as the cause of these two conditions, and were frequently present in the same animal. But years later, when Dr. Dorset and his co-workers discovered that the cause of hog cholera was a filterable virus, suipestifer and suisepticus bacilli lost their significance and are now regarded as secondary invaders. Bacteriologists are now inclined to question whether or not swine plague really exists as a disease per se.

Hutyra and Marek state that : "The overestimation of the importance of the ovoid bipolar bacillus being present in the infected lung tissue cause many to connect swine plague with chronic catarrhal pneumonia of pigs as the so-called swine plague, but there are no satisfactory proofs for such conceptions." They further state: "That it is of only slight economic importance and that the losses which are at the present time attributed to swine plague are actually the result of either hog cholera or the catarrhal pneumonia of pigs, and that the occurrence of acute and destructive epizootics of pure swine plague has, at least in Central Europe, never been positively established." They quote Schultz, Olt, Beck and Koske, who claim to have produced swine plague by intra-pulmonary infections or by inhalations of pure cultures of the suisepticus, but the disease produced has been a multiple necrotic pneumonia of the adynamic type or of an entirely chronic catarrhal nature. The duration of the acute form extends from one to two weeks and that complete recovery is rare, although occasionally the condition temporarily improves but it usually passes into the chronic form of the disease. However, Hutyra and Marek state: "That the limited

number of experiments do not appear sufficiently conclusive and that if any disease at all is produced, it is necrotic pneumonia."

Dr. Charles Murray of Iowa State College states that: "We believe that hemorrhagic septicemia in swine as a primary disease occurs very rarely. As a complication the presence of the bipolar organism is a rule rather than an exception."

In comparing the foregoing disease with the condition which we have diagnosed as swine plague, it is evident that the bipolar organism is not the causal factor. The condition we have termed swine plague in the past few years is of a sthenic type and primarily is not pneumonia. The symptoms of the condition are early development of thumps, edema of the eye-lids, intense lacramation, edema of the nasal and bronchial mucous membrane with profuse discharge of mucus, erythema observed on the thin parts of the skin, vomiting, harsh cough, assuming the breast position in lying, maybe diarrhea on the first day, rapid rise of temperature and rapid drop, the febrile stage extending over two or three days.

If the hog is killed and bled out on the first day during the exacerbation of the symptoms of thumps and high temperature, no visible lesions of pneumonia are observed, but if the hog dies, edema of the lungs is a marked characteristic with congestion of the mucous membrane in parts of the digestive tract, kidneys, bladder and oftentimes a clear coagulated exudate in the region of the kidneys. If a hog lives a number of days showing symptoms of this condition, broncho-pneumonia is usually manifested, probably due to the growth of organisms in the exudate of the bronchial tract. The areas involved shows it to be bronchogenic. The mortality is from naught to five per cent. Could this condition be a septicemia? Is it conceivable that septicemia would disappear in a herd with no or such slight losses in the number attacked? Efforts to transmit the disease on the Bureau experimental farm were without success. Several samples of material from infected hogs in six different herds were obtained and healthy pigs were injected with it. In no case was it possible to communicate the disease by these blood injections. Other investigations report the same inability to transmit this disease.

The term "flu" has been applied to this condition which is more acceptable; at least it is not misleading regarding the cause of the disease. For years past hog owners and veterinarians have observed this symptom of thumps with coughing, etc., in hogs after turning into a field of green corn or feeding heavily on green corn, or after turning into a soy bean field or into an alfalfa field, or after turning into a dry lot with access to self-feeder, tankage, shorts, etc. The association of this condition with the change of feeds has long indicated to me its influence in inciting this condition. It is so often seen in show hogs or in hogs being fitted for the market.

The appearance of the disease in connection with flushing with certain feeds has been apparent for years. This observation led me to conclude that this condition could be produced at will and induced me to try to produce the disease experimentally in chickens. I bought some 50 Black Minorca chickens, gave them a very small feed of meat scraps so as to sensitize these chickens against this form of protein, then withholding for a couple of weeks and allowing them access to all they could eat. In a few days after, the following symptoms were observed: edema of the eyelids and wattles, profuse lacramation, erythema of face, coughing, bronchial asthma and inappetence. The chickens recovered in the course of three or four days. The meat scraps were again withheld for two or three weeks and again the experiment was repeated with similar results. This condition was induced several times in the fall and demonstrated that it could be reproduced at will. As these symptoms are so often seen preceding or are observed at the time of breaks in immunity to hog cholera, it led me to suspect that it was an anaphylactic condition and that metabolic changes were in progress that prevented cellular activity in the formation of anti-bodies injected with the virus of hog cholera ineffective. This led to the conception of conducting experiments on hogs to determine if this condition could be induced in hogs by the same procedure and if a break could be incited during this period. The experiment fully supported my contention and I am quite sure if we were to get accurate history of the initial symptom in breaks to hog cholera that we would be surprised to learn of the frequency that these symptoms were present.

In looking up the medical data, we find that this condition has been produced experimentally for years past and the symptoms produced are those that we have been attributing to swine plague or "flu." We find anaphylaxis written up in H. G. Wells' "Chemical Pathology," Kolmer's "Immunity and Specific Therapy;" R. H. Babcock, "In Further Dis-

cussion of the Nature and Treatment of Bronchial Asthma," 1917, Vol. 2, Medical Herald, 36; 143; R. Cook, 1917, Medical Clinic of North America, 1, 3; 721; Mark J. Gottlieb, 1917, New York Medical Journal, 106, 7; 313; O. Schloss, 1912, American Journal Diseases of Children, 3; 341; F. B. Talbot, 1916, Boston Medical and Surgical Journal, 175, 6; 190; 1911-12, Long Medical Journal; also a case report by Dr. L. C. Frost, 1915 Medical Record, Sept. 8, in which the following symptoms were noted in a woman suffering from anaphylactic shock produced by protein poisoning: sneezing, vomiting, edema of the eye-lids, cyanosis of the fingers and lips, due to bronchial asthma induced by the poisoning, rapid rise of temperature, symptoms subsided in 2 or 3 days.

It is quite evident that this condition in hogs is a herd condition and is not transmitted by contact with hogs as we have seen in a number of instances when hogs on a different diet mingling with these affected hogs without once transmitting the symptoms. It is, therefore, evident that this condition in hogs is really an anaphylaxis and that if injected with virus when this condition exists or if this condition is induced shortly after vaccination, that infection with virus will result. Also that in hogs with active immunity when this condition is induced and exposed to hog cholera virus during that period that the protection of the anti-bodies to hog cholera is withheld and accounts for these breaks in active immunity to a large extent.

A Tribute to Dr. James Law

By V. A. MOORE.

THE history of veterinary education in America is recorded in the biographies of a few distinguished leaders. The evolution of the veterinary practitioner from the untrained and illiterate enthusiast to the well-educated, technically trained and legally licensed veterinarian of today is the product of the efforts of a few veterinarians who came to this country from Europe in the sixth decade of the nineteenth century. They all became connected with veterinary colleges. Some of them established schools that were supported by the fees of students, and consequently were restricted to teaching, largely on a commercial basis; two of them came to great universities that were in the making under the Morrill act. One of these veterinarians, together with his pupils, brought forth the veterinary college at Ohio State University. Dr. Law came directly to Cornell as professor of veterinary medicine and surgery. He and his pupils founded the New York State Veterinary College at Cornell University, the Federal Bureau of Animal Industry and the first state live-stock sanitary board. Always a leader, he often formed public opinion and guided public action in many critical periods.

Dr. Law was a life-long advocate of a preliminary and professional training for veterinarians that would render them the peers of the medical profession. It was through his influence that a four-year high-school course was required by statute for entrance to the college he founded and also for admission to the veterinary licensing examination of the state. He believed in adequate preparation for veterinary students and likewise their protection after graduation to the end that competent veterinary service might safeguard the live-stock interests of the state. He was sent to represent the United States at the International Veterinary Congress in Brussels in 1883. While in Europe he collected data on the requirements for graduation in thirty-three veterinary colleges on the Continent. The report he made on those institutions and his notable address, ten years later, before the New York State Agricultural Society on "The Importance of a Higher Veterinary Education" are the two strongest arguments in our literature for a better veterinary profession.

Dr. Law was a prominent writer on animal diseases and their control. He contributed many papers to veterinary societies and journals and also to agricultural papers and public health associations. In order to assist animal owners at a time when there were few, if any, veterinarians in the country, he wrote a very helpful book entitled, "The Farmers' Veterinary Adviser," which passed through sixteen editions. He is the author of a comprehensive system of "Veterinary Medicine" in five volumes, which is in its third edition. Before coming to America he prepared, in co-

operation with Dr. John Gamgee, the principal of the school where he taught, a well-illustrated book on "The Anatomy of the Domestic Animals," which is still held in admiration for its clearness, conciseness and accuracy. In addition to his writings he was always ready to give any assitance he could to advance his profession.

The opinion of Dr. Law on all veterinary subjects was sought for and held in high esteem not only by animal owners and veterinary practitioners but also by state and federal officials. For many years he was the leader in live-stock sanitary work in the United States. The service he rendered to the government in the investigation of swine diseases, in the eradication of foot-and-mouth disease in the earlier outbreaks, in exterminating contagious pleuro-pneumonia were of incalculable value. His early experience in Scotland with foot-and-mouth disease had caused him to believe that the radical method employed by the United States government for its elimination was not necessary. Although scientific in his habit of thought he was a conservative. He was in full accord with the Bureau of Animal Industry in its method of eliminating contagious pleuro-pneumonia. More than this, his firm stand on its extermination saved the nation untold millions. His experiments in the use of heated cultures of bacteria, the first of their kind in America, have been overlooked by many writers on that subject.

Dr. James Law.

Dr. Law was educated in the veterinary and medical schools of Edinburgh, Scotland, a student of William Turner, the great anatomist, and Joseph Lister, the father of antiseptic surgery. He studied also in the veterinary colleges of Lyons and Alfort, France. He prepared himself thoroughly for his life's work. Dr. Law was an inspiring and thorough teacher. In his earlier years at Cornell he was not only a teacher of unusual distinction but also the leading comparative anatomist and pathologist, the most skilled in veterinary surgery, the keenest in physical diagnosis, and the most scientific and successful live-stock sanitarian in America. It was at his hands as students that Daniel Elmer Salmon and Leonard Pearson received their inspiration for the valuable work they accomplished. Occasionally, in those earlier years, with a prophetic vision, he would refer to the coming of veterinary colleges that would be worthy of the cause they were to serve. Although the ideal which he wished to be attained is still a long way in the distance, he laid the foundation and centered the attention of veterinary teachers on the goal. This was a large task for one man to perform. And now, the mantle of this great scholar and teacher has fallen on the veterinary educators of the land. No one of them is capable of wearing it alone. It must be borne by them all as a united body, dedicated to the task of securing the best possible preparation for coming veterinarians.

Dr. Law was born Feb. 13, 1838, in Edinburgh, Scotland. In 1860 he became professor of veterinary anatomy, physiology and materia medica at the New Veterinary College of Edinburgh and its continuation in London as the Albert Veterinary College, where he remained until 1867. In 1863 he married Miss Elizabeth Creighton of Kirkcaldy. They were blessed with one son and three daughters. The son died at the age of 30.

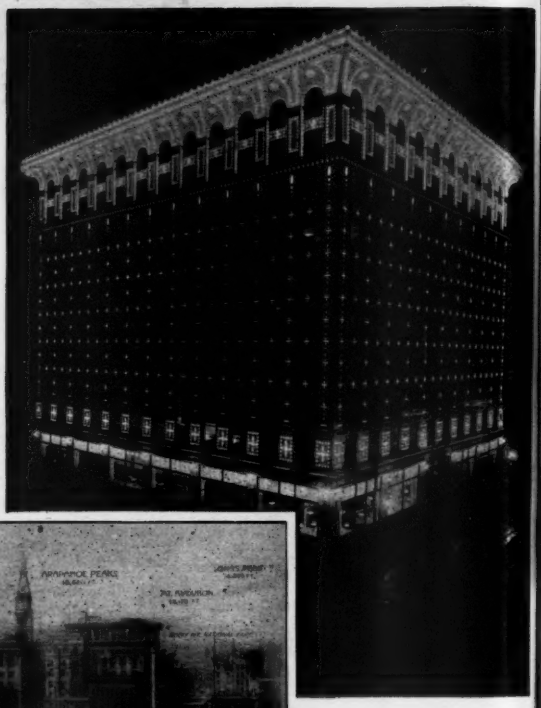
Dr. Law came to Cornell University as professor of veterinary medicine and surgery in 1868 at the solicitation of the Hon. Andrew

(Continued on page 89)

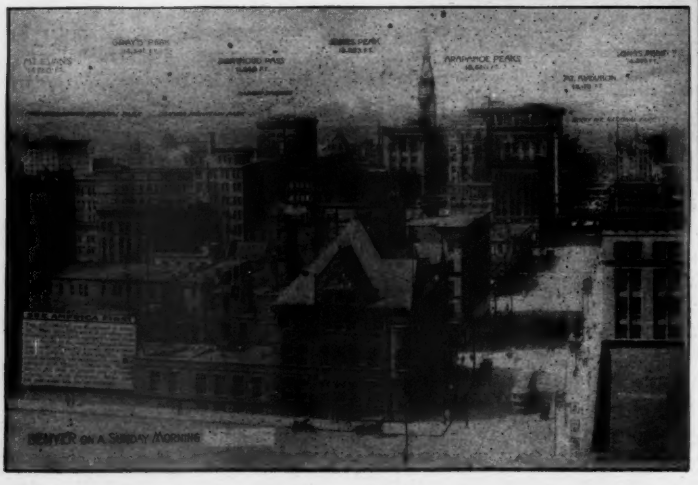
Welcome to

Colorado Preparing tion to Visiting Vet A. V. M. A. Meet

The Welcome Arch of the city of Denver.



The most brilliantly illuminated building of its size in the world—Denver Gas Building.



Denver on a Sunday morning.

Denver

Cordial Invita-
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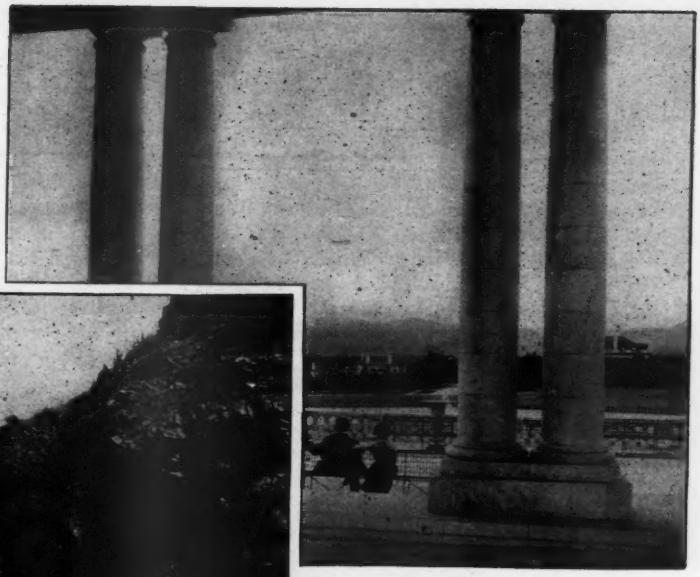


The Cheesman Memorial affords a clear view for over 200 miles.

Scene of the Bear Creek Canyon.

The winding trail on Lookout Mountain. Col. W. F. Cody (Buffalo Bill) is buried at the summit of this mountain.

Abstracts of Foreign Literature

Edited by A. EICHHORN, D. V. S.

Treatment of Scabies in Horses with Sulphur Fumes.

Professor Magyary-Kossa and Dr. T. Vadja (Allator. V. Lapok. 1920, No. 13).

In six gas chambers constructed according to a system of the authors up to the present time 2,200 horses were treated with gas without a single mortality. In some of the horses an idiosyncrasy against the sulphur fumes could be observed which was manifested by general depression, inappetance, and arhythmia of the heart. The summer heat increases the sensitiveness of the animals to the treatment. Therefore the gas chambers should be occasionally cooled. The authors do not use liquid dioxide, but produce the sulphur gases from sulphur; by this procedure the dose of the remedy is always the same, as it is weighed before use; the method is much simpler and is in practice easier carried out than the other.

Remarkable is the variance in the data with regard to the percentage concentration of the gas, and which vary from 3 to 6 percent. In this data no consideration was given to the fact that the hair of the horse in the gas chamber absorbs a considerable amount of the sulphur dioxide gas. According to the experiments of the author the layer of gas surrounding immediately the body surface is much more concentrated than the sulphur dioxide in the other parts of the chamber. The published data on the percentage concentration therefore must be considered as incorrect. The absorption should not be confused with the adsorption. Fats and moisture enhance considerably the gas-binding properties of the hair; in horses covered with perspiration the concentration of the gas in the chamber drops as much as 50 percent as a result of the great absorption. In burning of the sulphur not only sulphur dioxide is formed, but also sulphur trioxide and even higher oxides of sulphur; therefore, a gas mixture. When sulphur trioxide comes in contact with water it forms sulphuric acid. The perspiration is of acid reaction. If the gas mask is not properly applied the sulphur dioxide gas which reaches the eye may cloud the cornea; the surface becomes covered with free folds which later may be easily removed as lamellae with the aid of forceps; whereupon the cornea is again evenly clear and transparent. This thin layer may be stained on the eye with methylene blue or hematoxylin and in this manner the removal of the folds may be readily carried out. The action of the sulphur gas on the cornea is now being histologically thoroughly investigated, as there might be a possibility to utilize the treatment therapeutically for the purpose of removing superficial cloudings of the cornea.

Investigations on Occurrence of Paratyphoid-like Bacteria in Horses and Their Relation to Infectious Abortion of Mares.

Dr. Gminder (Arb. a. d. Reichsgesund. 1920, Vol. 52, No. 1).

Gminder examined bacteriologically and serologically in all 43 cases of infectious abortion in mares during 1913 and 1916. The fetal membranes of the aborted fetuses revealed in all cases the same findings. The surface of the chorion which appeared reddened or permeated with spotted hemorrhages, showed a grayish, smeary odorless deposit; the underlying connective tissue of the chorion was more or less thickened and infiltrated with a slimy or gelatinous exudate (similar to infectious abortion of cows). The fetuses which were aborted between the fifth and eight months showed icterus in most cases. The meconium has passed off and soiled the surrounding part of the anus. The abdominal and thoracic cavity, also the pericardium contained considerable quantities of a clear or cloudy serous fluid. Inflammation of the gastro-intestinal canal, especially of the small intestines, swelling and brittleness of the liver, punctiform hemorrhages on the spleen, grayish red discoloration and a tenderness of the hard muscle were more or less pronounced in all cases. Small, pregnant test animals inoculated with the material obtained from the specimens caused abortion in all of these infected animals, in from one to eight days. From the internal organs of

these test animals and also from the expelled fetal membranes, paratyphoidlike bacteria were isolated which were identical with those obtained from the forwarded specimens.

These findings confirmed the contentions of the more recent literature that infectious abortion in mares is not caused by a single etiological factor. Aside from the streptococcus isolated by Ostertag other bacteria, namely, those of a paratyphoid-enteritis group are responsible for infectious abortion in mares. However, Gminder's investigations established that the paratyphoid strains cultivated from the experimental material have no uniform characteristics. Therefore they should not be considered as a uniform type. The serum of mares which aborted proved to contain specific antibodies on the agglutination and frequently also on the complement fixation test.

On the Action of Lactifuges in Cattle.

Maulhardt. (Inaug. Dissert. Hanover, 1919).

In practice veterinarians frequently meet conditions in which it is indicated to reduce the milk secretion in our domestic animals or to cause an entire suspension of the same. Such necessity appears for instance after abortions, especially in mares and in bitches, or after weaning. The author conducted experiments with the various preparations in use for such purposes such as iodid of potassium ointments applied to the udder and iodid of potassium, oleum phosphori internally, atropin subcutaneously, alum solution, oil of rosmarinus, cannabis oil, and others externally. The results were not satisfactory. Noteworthy success was obtained only in cattle after the use of the iodin ointment and iodid of potassium internally. The iodism developing from the treatment proved very disagreeable, manifesting itself in mucus discharge from the nose, cough, swelling and reddening of the conjunctiva, diminished appetite, marked emaciation which at times necessitated the slaughter of the animal. It appears, therefore, that the remedies supposedly possessing a lactifuge action should be looked upon with skepticism. In solely depending upon them, at least in cattle, no marked results can be expected. If they are administered to induce an effective action, the dose has to be increased to such quantities that symptoms of poisoning develop or if used externally they have to be applied in such quantities that they result in harmful inflammatory condition of the udder. Therefore aside from the remedies now in use, active exercise, and a small amount of food containing a minimum of water is to be especially recommended.

Some Comparative Pathological Notes on Encephalitis Lethargica.

Joest. (Zeits. f. Infek. d. Haust. Vol. 21, No. 1).

During the past winter a peculiar encephalitis appeared among the inhabitants of various large cities, the principal symptom being sleepiness which was designated by the name of encephalitis lethargica (commonly spoken of as sleeping sickness). As the pathological changes disclosed inflammatory vascular adventitial infiltrations consisting principally of lymphocytes, therefore Joest compares this affection with Borna's disease of the horse, in which similar changes are found, and he is of the opinion that the disease in horses could be designated as encephalitis lethargica equi. In Borna's disease of the horse, similar, as for instance in rabies, ganglionic enclsoures are almost constantly observed in the brain. Joest, therefore, promulgates the question whether similar bodies could not be found in encephalitis lethargica of man.

Complement Fixation in Diagnosis of Glanders According to a New Method.

Finzi. (Rev. gen. de. Med. Vet. No. 345.)

According to Finzi, the mallein eye test, especially the intrapalpebral test, is superior to the complement fixation test for the diagnosis of glanders. The disturbing factors in the complement fixation test are the numerous doubtful results. The author attributes the failure to the technic of the method which, in its old form, requires many ingredients. Finzi claimed to have simplified the method and employs instead of guinea pig complement, plus rabbit amboceptor, only the serum of guinea pigs which previously were injected with carefully washed horse blood corpuscles (1, 2 and 5 cc. on consecutive days); instead of sheep blood corpuscles he then adds to the test horse-blood corpuscles; otherwise the author uses the same method as in the ordinary complement fixation test.

Finzi employed the new method on numerous cases of glanders, also on healthy animals as well as on such which were affected with other disease, and obtained very good results with the same.

Veterinary Surgery

Edited by L. A. MERILLAT, V. S.

Is Veterinary Practice Keeping Pace With the General Progress of Veterinary Science?

JUST a few years ago the whole trend of thought in colleges, in text-books, in current literature and in association activities was centered upon general practice. Matters appertaining to sanitary science were only casually discussed. Sanitary medicine had not developed and there were only a few to champion its cause. The practitioner held the fort and monopolized the whole realm. Gradually an officialdom representing a laudable cause and armed with good weapons took possession and left the practitioners outside the rampart and, although numerically strong, lack of forceful leadership, indifference and general disorganization are leaving the sanitary branch in almost undisputed possession. This is a fact to be faced and which is capable of bringing the practitioner to the level of "A thing that grieves not and that grieves not and that never hopes; stolid and stunned, a brother to the ox."

The growing impression among practitioners that the sanitary branch is naively and intentionally crowding them into the background is silly palaver. The fact is sanitary medicine is looking after its own interests, forging onward and piling up achievement after achievement while general practice is allowing itself to be overshadowed through its own weakness, its own lack of foresight and the hope to keep pace without effort. The helping hand the practitioner is waiting for to improve his status will never be extended. It is only through his own efforts that an improvement can be expected because everyone is too busily occupied with his own welfare to take a permanent interest in others.

Practitioner Must Progress or Perish.

General practice depends for existence upon the treatment of individual animals for individual owners. It is a vocation strictly delimited by its merit as a salvage enterprise on a much smaller scale than sanitary medicine. If it saves property below the cost of salvage it will live; if not, it will be deleted by the immutable laws of commerce. To live it must progress; to progress it must become useful, competent, efficient. It cannot thrive upon the false impressions about medicine or upon the public ignorance about therapeutic limitations. It must develop into a successful salvage unit. It must make good in the commercial sense.

Where the practitioner has failed is in having been carried away with the grandiloquent problems of sanitary science at the expense of the accomplishments which make general practice successful. We are ignoring, plainly and severely, the little "points in practice" so essential to success and to the development of a satisfied clientele. The bare truth is that we have become ashamed to discuss the little bedside essentials as if too homely to be listed among the lofty subjects that deal with salvage at wholesale, and since our work has shifted from the horse to all the other domestic species this lack of knowledge of detail is leaving us unequal to the task of our heterogenous function.

While it might be a herculean task for one man to accumulate the large budget of knowledge required to handle successfully every species of domestic animals in all of their infirmities and under all manner of age and condition it must nevertheless be done if we hope for a successful future.

The fact that human medicine is splitting up into specialties which sometimes deal with only one disease and always in a single species is often made an excuse for the shortcomings of the veterinarian who must handle every disease in so many different classes of animals. But this is not an excuse because the same degree of attainment, the same refinement of technic will never be required of a veterinary practitioner. What the latter needs to know is more of the ordinary things about

practice that he lacks today, and which he lacks because he has not devoted sufficient time to their study.

The practitioner should not aim to acquire the same efficiency in handling sanitary problems as the sanitary expert. He should acquire, in fact is legally bound to possess, a good working knowledge of the regulated contagions, to handle them intelligently until official help arrives, in order, as Chief Mohler has said, that he may form the advance guard, the picket line for the sanitary branch. The rest of his time should be devoted to the study of his own affairs. In this he will find an ample field.

Aids to Proficiency.

There are four available sources of information open to the practitioner, and the very life of veterinary practice will depend upon the zest displayed in the exploitation of each: the journals, the graduate courses in the colleges, associations, and books.

The Journals—The practitioner too busy to read all the available journals, is like the mechanician dismayed over a wrecked machine he had found no time to oil. Reading not only stores up information for future use but it also broadens the mind preparatory to all emergencies. The reader goes straight to his objective; the non-reader gropes about. The reader keeps a keen mind; the non-reader becomes blunted. Besides reading the practitioner should find time to report clinical fact for the information of others. These should be incontestable truths free from exaggerations or misleading statements. Failures and mistakes, or even down and out blunders, are often more instructive than great achivements, for in these the reader finds means of avoiding the same pitfalls.

In this connection it is almost deplorable to note how many among us are non-readers, how many who do not even trouble to remove from their wrappers the journals for which they subscribe, how many who know nothing of current progress exposed in recent issues, and how many who only take a glance, all of which incriminates us is not keeping pace with the sanitary branch.

Graduate Courses in the Colleges—It is probably through this source the practitioner can make the most progress; providing however the curricula are planned for him as a general practitioner. A course planned to cover practical details by specialists brought together for the purpose is the one big hope of veterinary practice. There is much to commend in the courses given in some of the state schools in the form of conferences which bring the veterinarians of the state together for educational purposes but paid for from public funds these must naturally drift into courses covering the larger state problems and being of very short duration. Our hobby—the little points of practice—can receive but scant attention.

The curriculum such as is given at the Indiana Veterinary College more nearly meets the actual needs of the ambitious practitioner. Here a group of selected specialists are brought together for a period of two weeks with the single purpose of giving a course of instruction limited to clinical facts. In short it is a course on practice to practitioners, a course on bedside work, a course on points in practice by men who have been life-long practitioners. The lofty things are intentionally omitted in order to bring the practitioners attending right down to details of his daily routine. It is doubtful if there is a more pleased assembly of teachers and students than that found at these courses. The practitioner leaves them filled with useful information that he can immediately put into practice, and is thus better prepared to give his clientele the kind of service that will place general practice on a higher plane.

The average veterinary conference and postgraduate courses of the past have been platitudes of orthodoxy that benefit the veterinary profession in a general way but always disappoints the practitioner insofar as immediate helpfulness is concerned. The fact that the Indiana course is not as largely attended as it should be is evidence that the practitioner is lagging and not keeping up with the procession as he should. More graduate work of just the right kind will do much toward the rehabilitation of the practitioner's status in the profession and among those he serves.

The Association—A glance at the programs of veterinary associations, national, state and local, shows that the practitioner is losing a golden opportunity to bring out the clinical details he needs most. In the national association a whole section has been turned over to the practitioner, but few of them contribute to its programs and few enter spiritedly into the discussions. The whole time of the sessions is taken over by others, and while there

is no intent to discount the value of their teachings it is from the experienced practitioner, from the man who understands the commercial aspect of veterinary practice, that our useful information must come. The teachings we need to bring practice from the background, to speak plainly, must come from those who subsist from fees obtained for services rendered to the owners of sick animals.

There could be no greater confession of failure than to admit that we are entirely dependent upon instruction from sources outside of the practitioner's ranks. It would be a confession that we have not shown sufficient initiative to split up the undergraduate fundamentals into applicable atoms. The section on general practice should be conducted for and by the general practitioner just as it is earnestly intended it should be, but because of the lack of interest, lack of professional pride or lack of an unknown something, the practitioner allows it to drift from his control and compels those in charge of the programs to seek more willing contributors. Here we find the most glaring proof that we have not kept pace with the sanitary branch. The association is begging to receive us with open arms, to give us a wide birth, and we fail to take advantage of the opportunity.

Officers of state associations will agree that they too find it very difficult to induce practitioners to contribute to the programs of their meetings and in despair usually must look elsewhere. The man who will get up before a meeting and tell us the best way to castrate a calf is the one wanted on programs of practitioner's meetings. Those who have only half-baked theories about lofty subjects to expose might better reserve them for occasions more opportune than during the precious moments of a literary session. An association meeting for practitioners should be limited largely to the relation of facts, of tried procedures and of successful treatments useful in the every-day work.

Value of Community Associations.

The work that most nearly meets the needs is that of the local associations, community, county and municipal, and it is a pity that more of these are not maintained. In these the discussions are usually confined to just the very topics that will place practice upon a higher pedestal. These little organizations bring out more truths, more unique manipulations, more good information and more successful treatments that can be turned into better service for the people the practitioner serves than is usually heard at the larger associations which devote so much time to the big generalities. The proof of this conclusion is the status of general practice wherever such associations have existed for a considerable period.

Books—No practitioner is doing his full measure of duty to his calling who does not supply himself with all the veterinary books published in the languages he reads. These are not too numerous to make the expense prohibitive, and while some may not amount to much the poorest one will always be found to contain at least a few things worth a hundred times the cost. A dust-ridden library of a few antiquated volumes is an exhibition that silently announces a non-progressive trend.

There could be no greater calamity befall the veterinary profession than to allow its integrity to disintegrate into different branches. Its power will depend upon a unity of effort by all who have received veterinary degrees, the sanitarian, the teacher, the food inspector, the small animal practitioner, the general practitioner, etc. While it is quite natural and indeed laudable that each of these groups commune for mutual welfare, the hope of the aggregate will depend upon the concerted action of all of them, and in these actions the practitioner, being numerically superior, should wield a much greater influence than he is doing today. So let us wake up and try to get up into the first platoon.

ANTIRABIC VACCINATION IN HORSE.

A horse bitten in the head by a dog that proved by histologic and biologic examination to have been rabid was vaccinated by the method of Remlinger slightly modified as follows: Twelve days after the accident the horse was given subcutaneously an emulsion of an entire brain of a virus rabbit fixed by a 60-day sojourn in sulphuric ether. The emulsion was made with 150 cc. of sterilized distilled water. The same injection was repeated on the sixth and tenth of December, and on the twelfth the brain of a rabbit sojourned for 48 hours in ether was administered.

No local or general phenomena ensued and the counter-test on a horse control and upon rabbits showed that the vaccination was efficacious, since all of the controls died.—"Recueil de Medicin Veterinaire," Jan. 15, 1921.

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.

Professor of Bovine Medicine, New York State Veterinary College at New York University, New York City.

Menstruation, Fertilization and Estrum

VARIOUS forms of hypertrophy of the endometrium, formerly thought to be the result of inflammation and called endometritis, are now known to be the result of circulatory changes. Until recent years all hypertrophied endometrium was generally supposed to be a pathological process. Scientific study has shown that the endometrium undergoes a definite physiologic cycle of hypertrophy each month, corresponding to the menstrual congestion. This change is characterized by a general thickening of the membrane. The stroma is swollen by the congestion of the blood vessels and by an edematous exudate in the spaces between the cells, while the glandular acini are longer and arranged in spiral forms. This process begins shortly before the menstrual flow, reaches its height during the flow, and then gradually subsides, to be repeated at the next estrual period. The pre-menstrual and post-menstrual hypertrophy is, therefore, physiologic and common to a greater or lesser degree to all menstruating endometria. This increased vascularity and hypertrophy must be taken into account, as we mention in our article on the "Diagnosis of Pregnancy."

Menstruation has never been considered of much importance either in the character or the amount of the discharge, as associated with estrum in our domestic animals, other than in the case of the cow it has been the general belief among stockmen that successful impregnation inhibits menstruation, and consequently if a pronounced bloody discharge is noticed after a cow has been bred, it is pretty good evidence she has not conceived.

Considerable observation leads us to believe that this is true at least in the majority of the cases. Williams' discussion of menstruation (Williams' "Obstetrics," 114-116) sums up the present knowledge on this phenomena briefly and concisely, in which he states that there occurs in some animals during or immediately subsequent to estrum, an evident discharge of blood from the vulva, which, mixed with mucus and epithelial debris, is known as the menstrual fluid, and the process as menstruation. The phenomenon is not so conspicuous in any of our domestic animals as is ordinarily observed in woman, and for the most part usually passes unobserved if present. It is quite commonly noted in the cow and bitch. It has been recorded in the mare by Flemming (Obstetrics) and Kaiser (Magazine, 1859). Many regard estrum and menstruation as synomymous. While they are intimately related we prefer to regard them as two separate phenomena, as observed in domestic animals.

While estrum is common to all mammalian animals of breeding age at the breeding period, menstruation or a muco-sanguinous vaginal discharge is not observable in most species at all, and in the cow where it is most conspicuous it ordinarilly does not always occur *during* but may occur *subsequent* to her very brief estrual period. In the bitch the relation is not so well determined, the estrual and menstrual phenomena being of greater duration and overlaping or occuring simultaneously. In the cow there is very frequently noticed at or near the close of the period of sexual desire a well marked discharge of blood from the vulva. The amount varies greatly, usually being limited to a sufficient quantity to plainly stain the tail and surrounding parts so that they are distinctly bloody, but sometimes there is a large amount of blood of a bright red color, mixed with mucus seen hanging from the inferior vulvar commissure. In a few cases we have observed quite a voluminous discharge of blood, amounting at times to several ounces and accompanied by some constitutional disturbance, consisting chiefly of decreased appetite and a loss of milk.

The sanious discharge occurring in the cow continues usually for only a very brief period of five to twelve hours. During this interval the cow may copulate, but estrum is not well marked. In the bitch the discharge appears during estrum

and continues for some days without usually being very profuse.

Fertilization.

Fertilization is the successful union of the male generative cell or spermatozoon with the female egg or ovum, by which the resulting cell acquires the power of segmentation and is enabled to develop into an embryo.

According to Marshall and other embryologists, fertilization in the rabbit occurs in from 8 to 12 hours after copulation. This interval is not due to the time required for the migration of the spermatozoa from the posterior portion of the genital canal to and through the oviduct, but to the fact that the ova are not discharged from the ovary until 8 or 12 hours after copulation. In the rabbit the spermatozoa are found to travel the length of the uterus and oviducts in from 15 minutes to 2 hours, and in the ordinary course of events are already in the pavillion of the tube awaiting the discharge of the ova. The doe rabbit copulates with the buck immediately after giving birth to young, the interval between estrual periods being the same as the duration of pregnancy.

We are not aware that any exact observations have been made in our larger domestic animals demonstrating the length of time elapsing between copulation and fertilization. In spaying cows, we have regularly observed that one which is in estrum has ripe ovisacs, which generally ruptures the moment the ovary is grasped. If the cow has been in estrum on the previous day we have found the Graffian follicle freshly ruptured. This would indicate to us that in the cow, as in the rabbit, ovulation occurs late in the estrual period or just at its close, so that under normal conditions copulation would precede ovulation and fertilization occurs some hours after the act of coition. In the rabbit fertilization usually takes places immediately after the eggs enter the oviduct which is probably the general rule in mammalia.

If eggs be taken from the upper portion of the oviduct, spermatozoa will usually be found imbedded in the zona radiata or lying in the space between the vitelline membrance and the egg. The exact process of fertilization has not been fully determined in our higher animals. It is generally held that a single spermatozoon fuses with the female pronucleus.

The Relation Between Estrum, Ovulation, Fertilization and Menstruation.

The relationship existing between the phenomena of estrum, ovulation, fertilization and menstruation has not been clearly determined. Owing to the very brief duration of estrum in the cow she offers a specially favorable opportunity for study. As already related in our personal experience in the spaying of cows, it has been found that estrum is the first of these phenomena to present itself and that if the ovaries be examined during the estrual period it is found that there is an enlarged Graffian follicle ready to rupture and that the walls give away under ordinary manipulation allowing the follicular contents to escape.

If the ovaries be examined during menstruation it is found that the ovisac has ruptured and its contents have escaped. It seems, therefore, that in the cow at least, the chronological order of these phenomena is estrum, ovulation, and menstruation, provided that this cycle is not interrupted by copulation and fertilization, when the order would be estrum, copulation, ovulation and fertilization. If successful copulation ensues early in estrum, it is the general observation that menstruation does not occur. Thus its advent would seem to indicate the death and expulsion of the ovum along with some of the epithelium of the uterus, accompanied with hemmorrhage in a manner to correspond in a way to the lochial discharge of parturition.

Williams further gives some interesting data on pages 117-118 relative to some observation made upon the length of time between successive periods of estrum that would indicate in the breeding of cows, that it should be the constant aim to have copulation occur somewhat early in the period of estrum, so insuring more likely conception.

In our sterility work if the organs of a cow seem quite normal but she is failing to conceive, or if by treatment they have become normal, we think it an advantage to have the animal bred as early and as late in the same estrual period as possible and as pointed out in one of our previous articles, we cleanse the cervix by douching with a warm normal salt solution for several days prior to breeding.

INGESTION OF FETAL MEMBRANES.

Under the above heading there is a difference of opinion as to the effect of this in cows, many practitioners holding that it frequently results in impaction, or auto-intoxication.

In the following two cases, presence of portions of membrances in the paunch may have been a coincidence, but is suggestive.

Case 1.—Subject.—Shorthorn grade cow, in

fair condition, six weeks calved; milk had gone off; appetite lost; temperature 102; pulse 104; respirations normal; rectal examination negative; no evidence of pain; cow had peculiar staring look about eyes, which seemed widely opened, and was dull and spiritless.

Diagnosis.—Indefinite.

Treatment.—Aimed at correcting digestive disorder, with amm. carb., pot. carb, and nux vomica. Owner said cow seemed to stagger when head was drawn round in drenching. Four days later animal seemed worse, glazed appearance of eyes more marked. Slight nasal discharge, cow lying and very weak. She was slaughtered.

Autopsy.—Indefinite. Rumen mucous membrane normal, contents rather fluid, and included part of placenta; other parts of alimentary canal and contents apparently normal. Liver slightly paler and firmer than normal; lungs, kidneys, uterus normal. Brain not examined.

Case 2.—Subject.—Black and White Jersey—Friesian cross cow, one month calved; good milker, on good hill pasture, not at all rich. Milk much reduced for two days, and appetite lost. Just after we reached her she took a fit, twisted muzzle round over neck, fell over, and lay twitching, with eyes rolling and jaws champing for about 1½ minutes. When she got up had a roused appearance, offered to charge anything in sight. Finally was got into a stanchion, and stood quietly. Temperature 103; pulse 90.

Diagnosis.—Uncertain. Some nervous derangement, probably induced from alimentary canal.

Treatment.—Gave mag. sulph. 1 lb.; 4 drams pot. bromide, in drench, and withdrew quart of blood.

Cow remained quiet all day, but next morning was having series of fits, and in interval turning round and round unceasingly to left. Put in a stanchion, she pushed blindly forward or pulled back; sweating profusely; temp. 107.6; pulse 200.

Prognosis hopeless and cow died in a fit soon after.

Autopsy.—Abdominal organs seemed healthy. Plenty of fat in omentum and around kidneys. Contents of paunch normal, but included part of placenta. Mucous membrane of abomasum congested, and contents faintly blood tinged; liver, kidneys, normal. Lungs not examined. Spinal canal semed to contain excess of fluids, vessels of brain were full of blood, but otherwise it seemed healthy.

In a third case, symptoms resembled those of No. 2. A cow, calved a month or so, went off her milk and feed. Previously quite a pet, she charged anyone approaching her, but in a blind drugged fashion. Dull stage supervened, but no fits. Unfortunately a post-morton examination was not made.—D. Marshall, M. R. C. V. S., Otago, New Zealand, in the Veterinary Record.

INGESTION OF PLACENTA BY COWS.

On page 55 of the May issue of VETERINARY MEDICINE, O. W. J. of Washington asks for information concerning two cows that died following parturition. He does not state whether these cows had a chance to eat the afterbirth. Of course, if they did not this suggestion has no value. However, if they did eat the afterbirth it is my opinion that both deaths were caused from that rather than from the fodder.

It is well to be very careful in regard to the owner's statement about these cases. I remember one case in particular where the owner claimed he had done away with the membranes and the cow could not have eaten them. Just as I was about to leave, a hired man appeared and said he had seen the cow eating them before they were entirely away from her. She had apparently eaten only a little of them. She was very sick but responded to treatment. I have had several cases exactly as described in the Journal, and treatment is in most cases of no avail It will cause straining and constipation and death. Some have a diarrhea in the late stages but also die.—H. Frederick, Westtown, N. Y.

Comment—The point raised by Dr. Frederick as to whether or not the cows ate their placenta is a very good one. Every veterinarian who has had much cattle practice and held post mortem examinations has no doubt learned that every now and then the eating of a placenta by a cow creates a serious digestive disturbance, but I have never seen a case of death, nor has any veterinarian ever told me of a case of death in cows when eating of the placenta was incriminated as the prime cause where the ailment was so acute that the animals died in such a short time after parturition as in the cases reported by O. W. J.

The cases I have seen have developed more of a chronic digestive disturbance lasting from two to five weeks after consuming the placenta and the decomposing membrances had passed back into the third or fourth stomach there to undergo putrifaction rather than digestion.

I believe there is practically no literature on this subject and if others will record their experiences while these cases are being discussed we could gather valuable literature promptly. —J. H. DeV.

Swine Practice

Edited by A. T. KINSLEY, M.S., D.V.S.

Swine Erysipelas

IN a recent number of the A. V. M. A. Journal, Creech of the Pathologic Division of the Bureau of Animal Industry reports the identification of the B. erysipelatous suis in the lesions of diamond skin disease of swine. Diamond skin disease has been recognized in Europe as a mild form of swine erysipelas. The disease in this country has thus far been of slight consequence. If the acute septicemia form of swine erysipelas has occurred in the United States, it has not been recognized or at least not reported.

Swine erysipelas is a specific infective disease of swine characterized by discoloration of the skin and various systemic disturbances, the intensity of which depends upon the severity of the attack.

This disease is of common occurrence on the European continent. It has been very prevalent in Germany, Austria, France, Hungary, Holland and Belgium, and has occurred sporadically in Norway, Sweden and Great Britain. Diamond skin disease has been recognized in the United States for many years as an urticarial disturbance.

Swine erysipelas is essentially a disease of the porcine species. Infection may occur in man by inoculation through a wound. Mice and pigeons are susceptible when inoculated, and usually die in 3 to 5 days. Local lesions may be produced in rabbits by subcutaneous inoculations of cultures of the bacillus. Horses, cattle and sheep are immune, as are canines and felines. Young pigs and mature swine are much less susceptible than growing shoats.

Cause of the Disease.

The cause of swine erysipelas is the B. erysipelatous, and was discovered by Loffler in 1885. It is a non-motile slender bacillus with rounded ends varying in length from 1 to 2 microns by about 0.2 to 0.3 microns in diameter. It does not form spores. It stains readily with any of the ordinary aniline dyes and is Gram positive. It is facultatively parasitic and it is thought that infection may occur from soil. It is rather resistant to external injurious influences but is destroyed by prolonged drying. It is facultatively anaerobic and grows readily at ordinary temperatures.

Source of Infection.

The usual source of infection of swine erysipelas is from contaminated food or water. The B. erysipelatous suis usually occurs in the feces of infected swine and therefore soil, feed, water, beds and troughs become contaminated. Affected swine carry the infection into new territory from which new centers of the disease are established. The extensive movement of pure-bred swine, and swine on show circuits are a ready means of extending infection. Pork scraps in garbage is another means of the dissemination of infection. It has been demonstrated by Olt, Jensen and others that there are healthy carriers of the B. erysipelatous suis which may be a very important source of contamination of new premises from which new centers of infection may arise.

The avenue of entrance of infection is probably the digestive tract but it has been difficult to produce the disease by incorporating cultures of the bacillus in the feed, although the bacilli can be demonstrated in the feces of affected swine.

The usual period of incubation in the acute type of the disease is from 2 to 4 days. It is difficult to determine the incubation period in the mild or chronic form but it is probably longer than in the acute type of the disease.

Lesions of Swine Erysipelas.

Swine erysipelas may be acute or chronic. In some cases the septicemic form is so rapidly fatal that there are no distinct characteristic lesions. In the ordinary acute cases there will be varying quantities of a bloody serous fluid in the body cavities. The lymph glands throughout the body will be tumefied, congested and in some cases hemorrhagic. Petechial hemorrhages will occur in the parietal and visceral serous membranes and in the mucosa of the digestive tube. There may be gas-

tritis and enteritis in varying degrees of intensity. The solitary follicles and peyers patches will be tumefied. In some cases there may be ulceration of the intestinal mucosa. The spleen is usually hyperemic and slightly tumefied. The liver has a parboiled appearance. The kidney may evidence petechial hemorrhage and glomerular inflammation and cloudy swelling. There will be congestion and edema in varying degrees in the lung. Petechial hemorrhages may occur beneath the epicardium and endocardium and in the substance of the heart. The skin and subcutaneous tissues in the discolored areas are edematous and may contain many petechial hemorrhages. In extreme cases, particularly when the patient survives for several days, there may be necrosis and sloughing of ears, tail or areas of skin.

In the chronic type of the disease as it occurs in foreign countries the carcass is emaciated. There are discolored areas of the skin, particularly of the ears and venter abdominal surface. There is usually a considerable quantity of bloody fluid in the thorax and the lung is edematous. There are vegetative deposits on the cardiac valves. There may be congestion of the mucosa of the large intestine. There is usually an enlargement of the liver and spleen.

The lesions of diamond skin disease of swine as it occurs in the United States consists of diamond shaped areas of discolored skin. These areas are variable in size. In some cases they are quite small and in others they may be as large as a hand. The reddened area is due to congestion and hemorrhage and there is also considerable edema. In the later stages the affected areas may become necrotic and may or may not slough. Practically all cases of diamond skin disease that has been identified in this country has been at the time of slaughter by veterinary inspectors and no other than the skin lesions have been reported.

Symptoms.

Swine erysipelas occurs in foreign countries primarily during the summer months. In the United States, diamond skin disease has been found in any and all seasons. The acute or septicemic form of the disease has a sudden onset and the affected animal shows marked depression. There is a high temperature, inappetence and there may be nausea and vomition. In some instances there is evidence of cerebral disturbance. The ocular mucosa is congested and there may be edema of the eyelids. There is constipation in the beginning due probably to the high temperature, but in the later stages there is marked diarrhea. The characteristic reddening of the skin may occur within 24 hours after the onset or it may not occur until just before death. The reddening occurs on the abdomen, in the groins, axilla, upon the neck and ears. These areas are pale red in the beginning but soon become intensely red. These areas may extend and fuse, thus forming large blotches. The skin in the affected areas is not hypersensitive. In some cases small vesicles may occur and in some severe cases there is necrosis and sloughing of the affected skin areas. As the disease progresses, weakness becomes pronounced and there may be inco-ordination. There may be a subnormal temperature prior to death.

The chronic type of the disease is sometimes described as "chronic erysipelatous endocarditis" and may be a sequel of a mild acute attack. The first evidence of the disease is unthriftiness and underdevelopment. When lying down the affected animal will rest on sternum and elbows. There may be an aggravated cough with an associated disturbance of respiration. There is an increased heart action and evidences of cardiac valvular defects. Red areas usually occur on the ears, neck and rump. As the disease progresses the affected animals become emaciated and weak. A chronic eczema may occur as a sequel of the skin lesion.

The urticarial form of swine erysipelas or diamond skin disease is the mildest form of this malady. It is manifested primarily by circumscribed elliptical or quadrangular red areas on the ears, neck, chest, back and thighs. These areas are usually about 1.5 inches in diameter and are slightly elevated above the surface and as the lesion becomes older the central portion may become paler. In some cases vesicular formation occurs. During the early part of the eruptive stage there may be a rise of temperature, general dullness, inappetence, constipation, conjunctivitis and incoordination. These symptoms usually subside when the eruptions are complete. The eruptive stage usually terminates in 2 to 3 days, although it may persist for a week after which the animal usually makes an uneventful recovery. A mild form of this type of the disease is apparently present in the United States. It is possible that the disease is not as severe as the urticarial form is in Europe. However,

the percentage of fatalities varies in the different forms of this disease. Diamond skin disease usually terminates in recovery. The septicemic type is fatal in the majority of cases, the cases recovering rarely exceeding 20 to 30 percent.

Diagnosis.

The acute or septicemic form of swine erysipelas may be confounded with hog cholera, swine plague and perhaps some other septicemic diseases. The symptoms and lesions of acute erysipelas, swine plague and hog cholera are so similar, unless the vesicular cutaneous lesion of swine erysipelas occurs, that the only positive means of differentiating is by identification of the causative agent of each malady. In some sections of the country it may be necessary to differentiate anthrax from swine erysipelas which can usually be accomplished by a careful consideration of the history, the cause of anthrax usually being ingested in swine, combined with the absence of skin eruptions or discolorization which is characteristic of erysipelas.

Mange and digestive urticaria can be distinguished by a careful examination of the skin lesions and consideration of the history.

So-called measles that occurs in swine should be carefully investigated as it may prove to be a sequel of urticarial erysipelas.

Treatment.

General systemic treatment has proven of little value. Some reports appear to indicate that intestinal antiseptics may be of some value. An immune serum obtained from animals that have been hyperimmunized by the repeated subcutaneous or intravenous injections of the B. erysipelatous suis has been successfully used as a curative agent when administered in the early stages of the disease. This serum will also produce a temporary immunity when properly injected into susceptible swine. An attenuated culture has also been used in the production of immunity against this disease. Lorenz demonstrated that injections of virulent cultures into animals that had been immunized by serum alone produced a relatively permanent immunity. This method of simultaneous immunization is usually designated the Lorenz method and this method of immunization has been quite successfully employed in continental Europe for several years.

It is not the intention of this article to imply that swine erysipelas in a virulent form exists in the United States, but in view of the published findings of the Bureau of Animal Industry, it appeared timely to briefly discuss this disease at this time.

OLEAGINOUS APPLICATION KILLS SWINE.

I have a proposition on which I would like Dr. Kinsley's opinion. On Tuesday morning, June 7, at 6 o'clock, I began vaccinating a herd of 141 head of sows, shoats and pigs as follows: Eight brood sows, seven suckling pigs and the remainder of the herd from 40 to 100 pounds. The serum used was Aurora, of which I used a total of 4,425 c.c., virus 140 c.c.

Seventy-one head of Hampshire shoats, weighing about 40 pounds each, were given 30 c.c. of serum and 0.75 c.c. of virus. Of the 71 head there were six dead ones in about three hours after treating. The remaining 70 head were injected according to size, which dosage ranged from 40 c.c. to 90 c.c. of serum and from 1 c.c. to 2 c.c. of virus. The seven suckling pigs received 20 c.c. of serum and 0.5 c.c. of virus; these were included in the last 70 head.

The 71 head of which six died were left in the barn for perhaps 2 hours after treatment, as they were infested with lice and the owner desired to oil them. He said he took scarcely a pint of stock dip, one gallon of coal oil, and mobil A oil to make three gallons, and sprinkled the entire 71 head with a hand sprinkler while they were warm; then he turned them out and drove them about 200 yards across the road into a pasture and in about an hour he found six dead ones.

They all appeared perfectly healthy before treating, but since this occurrence he has advised me that about a week prior to treatment he had lost two shoats and had two others that did not act right for a day or two. I did not know anything about this until subsequent to the treatment and death of the six, following treatment. Aside from the six which died, he reports the others are all doing fine.

Did the sprinkling of these pigs when hot have anything to do with the death of them, or can you assign any cause for so hasty a death of only six and the others being all right out of a herd of 141 head? There were none of them that received any rough handling and each and everyone received serum and virus alike according to size.

(Continued on page 78)

Live Stock Poisoning

Edited by L. H. PAMMEL, Ph. D.

Professor of Botany, Iowa State College, Ames, Ia.

Poisoning from Western Poison Ivy

JAMES B. M'NAIR has made a study of the western poison ivy (Rhus diversiloba) in the American Journal of Botany, 8:127, 146, 2 f. 2 pl., 1921. This is the first most tensive paper on this western poison ivy that I am acquainted with. There is a rather interesting historical note by the author which is worth quoting in this connection, an account of its quaint language and spelling, and the fact that Captain John Smith mentions its poisonous qualities. Captain Smith says: "The poisonous weed, being in shape but little different from our English yvie; but being touched causeth reddiness, itchings, and lastly blysters, the which, however, after a while they passe awaye of themselves without further harme; yet because for the time they are somewhat painfull, and in aspect dangerous, it hath gotten itselfe an ill name, although questionlesse of noe very ill nature."

Much of the paper is devoted to a study of the characters. One who knows species can readily distinguish them by their leaf characters. The leaves of both kinds consist of three leaflets. The Rhus diversiloba is a purely western species west of the Sierra and the Cascade mountains.

"The freshly exuded resinous sap of R. diversiloba has long been known to be capable of producing dermatitis when applied to the skin. With this in mind, investigations were carried out to see whether the poisonous portions of the plant are limited to those portions that contain the resin canals.

"The pollen was collected by shaking the flowers over a glass funnel to the stem of which a test tube was attached. This pollen was found to be non-poisonous when rubbed into the skin of an individual sensitive to the poison. An alcoholic extract of the pollen was non-toxic, nor did the pollen or the alcoholic solution assume a dark brown color when treated for five minutes with potassium hydroxide as does the poison. It is concluded, therefore, that the pollen is incapable of producing dermatitis.

"The fresh sap emulsion is the only part of the plant capable of producing dermatitis.

"Those portions of the plant that do not contain the resin canals do not normally have this kind of toxic effect.

"The non-toxic portions are the anthers, pollen, xylem, epidermis cork cells, and trichomes.

"The resinous sap of the stems and roots retains its toxicity probably without much variation in amount or in the degree of virulency thorughout the year. This is evidenced not only by citations from literature and by statistics, but also by experiments conducted with the sap by the writer.

"The virulency of the plant varies with the different seasons of the year in accordance with the stage of growth of the leaves, stems and flowers. When the first leaves of the plant are unfolding in the spring they are very turgescent and easily injured. Analogously, the growing stems are less resistant than the mature stems. The mature leaves of the plant are not nearly as easily injured. Of the mature leaves, those that grow in the shade have a weaker structure than those which develop in the sun. From this fact one might expect the shade leaves to be less resistant to injury.

"The amount of poison in the plant varies with the capacity of its resin canals. Of this variation in amount, that of the stems and leaves is most commonly effective in the index of virulency. The leaf area undoubtedly makes its greatest increase in spring between the time

Readers are urged to take advantage of the opportunity offered by Dr. Pammel, for the identification of specimens of supposedly poisonous plants. Two good-sized specimens, carefully packed, should be sent to him direct, with such history as may be available. Simply mention that you are a reader of VETERINARY MEDICINE and no charge will be made for this service.

when the leaves begin to unfold and the time the leaf area of the plant is nearly constant until the leaves begin to fall in autumn.

"This theoretical consideration of the liability to Rhus poisoning from a botanical point of view has its counterpart in clinical statistics. The latter lend analogous evidence to the conclusion that spring has the greatest number of cases, that a sudden decrease in cases occurs during the time of the autumn tints, and the least number of cases takes place during the dormancy of the plant from November until February."

Transmission of Poison Ivy Poisoning.

In another article by James B. McNair on the "Transmission of Rhus Poison from Plant to Person" in the American Journal of Botany, 8:238-250, he reviews the work of various authors in regard to the nature of the poison. The earliest explanation was that the plant gives off an invisible poison, which when breathed or permitted to touch the skin causes dermatitis. The Indians and negroes shared in this belief. Pfaff it will be recalled, obtained an active principle which he called toxicodendrol. Acree and Syme found gallic acid, fisetin, rhamnose and a poisonous tar, gum or wax. This paper was published in 1906-1907. These authors, after exhaustive research, came to the conclusion that the poisonous material was a complex substance of a glucosidal nature. Chyser in 1910 considered the poison of Rhus to be a toxalbumin. McNair does not agree to the announcement of Acree and Syme nor to the theory of Chyser, that it is due to something other than a glucoside of fisetin, rhamnose and gallic acid. The author finds that the poison is non-volatile, McNair used the western species (Rhus diversiloba) according to this author the plant is capable of poisoning only where injured in such a manner that the poisonous resinous sap exudes. He has certainly proved that the plant poison cannot be blown. Dermatitis occurs only on the area of the skin to which the poisonous sap is applied. The plant hairs, pollen epidermis and cells and wood do not produce the poisoning. The poison is confined exclusively to the resinous sap, poisoning without necessary contact with the plant. "Poisoning without contact with the plant may occur from the smoke of the burning plant or by contact with substances that have the poisonous sap on them, such as clothing, shoes, cordwood, tools, the hair of animals, etc."

SILAGE POISONING.

Dr. W. S. O'Brien of Ryan, Iowa, sent the following letter in regard to silage poisoning: "Am sending you a package of moldy silage. Please tell me what kind of mold it is and if injurious to cattle. On a farm near here the owner had a very fine Hereford bull, 15 months old, which died in his stall without any evidence of a struggle. He was so decomposed when I saw him that diagnosis was impossible, possibly hemorrhagic septicemia. Owner blames silage as several spots in silo were as sample."

Dr. M. M. Davis of Mt. Hope, Wis., sent the following letter: "Under separate cover I am sending you a sample of silage that is moldy, which I claim is causing considerable loss to one of my clients. The silo that this sample came from has about one foot of mold on the outside and scattered all through the rest. He has lost three head of cows and another was sick when I was called, all had been getting this feed. They all resemble forage poison from the symptoms the client gave me; also the one I saw today. Please examine and report to me; also advise treatment."

I have examined the material and in each case have found it very moldy, the material being essentially the same. There were many bacteria, but the species were not determined. The following fungi occurred: red mold (Monascus purpureus), green mold (Aspergillus glaucus), and blue mold (Penicillium galucum). The blue mold is not injurious. The green mold is not pathogenic although there is some evidence that it produces a toxic substance and is injurious. The red mold has frequently been found in spoiled silage that caused injury to horses. It has not been proven to be pathogenic. Certainly this moldy silage is injurious to animals and should not be fed. It always occurs in silos where air has access to the silage.

POISONING FROM NICOTIN.

William D. McNally gives a review of nicotin poisoning.* In the five cases McNally reports death occurred from having taken by mistake insecticides containing nicotin. The alkaloid is a colorless oily liquid which rapidly becomes brown in color, closely resembling whisky, which accounts for the poisoning. In all cases death occurred in a few minutes. Three of the deaths occurred in men employed in greenhouses.

Laboratory Diagnosis

Edited by C. A. ZELL, D. V. M.

Hemorrhagic Septicemia in Cattle

I AM sending you a specimen of the spleen, liver and small intestine from a cow 11 years old. About January, 1921, the owner lost several two-year-old steers that were running out in the corn stalks. A detailed postmortem examination was made by two veterinarians, both of whom diagnosed the ailment as hemorrhagic septicema. His entire herd, both young and old, were vaccinated, with the exception of seven bulls, which he did not wish to have vaccinated, but instead wanted them castrated and put in the feed lot.

Forty-five yearlings and two-year-olds were vaccinated; also five old cows. He had lost on the average of two or three a week for a number of weeks, and after vaccinating all losses ceased. One heifer that was down was vaccinated; two days later, when the herd was vaccinated, the animal was revaccinated and made a complete recovery.

In a couple of weeks the bulls that had been castrated started dying and he lost three of them in a week. Then the other four were vaccinated and his losses stopped again until four or five weeks later when the herd that were vaccinated at first started to die. He lost three or four young steers, together with the old cow from which the specimens were taken.

The local druggist here sent blood specimens to two different laboratories and they both came back with the statement that there were no black leg organisms present but a few of the hemorrhagic septicemia group were found and would suspicion the latter as the cause of the trouble. He then sent some tissue with a description of the postmortem lesions that were found, and it came back with the statement that there were no black leg or hemorrhagic septicemia organisms present but would suspect malignant edema.

The animals would seem to go crazy, froth at the mouth and run into objects. The one that was posted had a bloody discharge from the nostrils and anus, showed petechial and diffuse hemorrhages along the aorta, on the spleen, edocardium and pericardium, the bladder, trachea, intestines and a few on the kidneys. The last one posted lingered along for several days and then died. She showed the same lesions but not in so marked a degree; in addition there were small caseous nodules all over the intestines, brown color and the size of a pin head to a pea (looked like nodular disease); also had an infection of the throat and pectoral region; jelly-like material under the skin and in the subcutaneous tissue.

The two that died before this one, the owner said, were affected like this one in the throat which had the appearance of a bruise, and the other one was affected in the back across the kidneys, extending through the muscles.

The cattle were in poor condition and were kept in the same field as the owner did not have another pasture to which he could change them. I told him I thought the immunity had run out and that they were still dying from hemorrhagic septicemia, unless this one died from nodular disease and old age. Please examine these specimens

Directions for Packing Specimens for Laboratory Examination

1. Gross anatomical lesions, where a bacteriologic examination is desired, are best sent packed in an ample quantity of borax. A corrugated paper or wooden box is preferable to an airtight container (can). As second choice, such specimens may be carefully wrapped in cloth, wet in a 10 percent formalin solution, properly boxed.

2. Specimens of tumors or other tissue, not for bacteriological examination, may be sent in a 4 percent formalin solution.

3. Specimens of blood, pus and body fluids for bacteriological examination or for serum tests should be drawn aseptically and sent in sterile containers (small bottles boiled and cooled), airtight. Such specimens should reach the laboratory quickly. If sent by parcel post, should be sent special delivery. It is best to send blood, pus and body fluids by first class mail, special delivery. If the quantity of pus is small, dilute with sterile normal salt solution to prevent drying. Sterile containers supplied free on request.

Chemical analyses cannot be furnished free of charge, owing to the vast amount of work involved.

Send all correspondence and specimens to Veterinary Medicine, 53 W. Jackson Blvd., Chicago, Ill.

and give me your diagnosis.—W. B. P., Iowa.

Reply—Bipolar organisms of hemorrhagic septicemia were found in considerable numbers in the liver and spleen; consequently these findings, coupled with the postmortem lesions described by you, leave scarcely any doubt but what the animals described in the foregoing died from hemorrhagic septicemia.—C. A. Z.

MIXED INFECTION IN SWINE.

Am sending specimens of lung, liver, spleen, kidney, bladder, etc., of a hog for laboratory diagnosis. I did not see the animal until after death, and as it was dark I was not able to make a satisfactory postmortem examination; but the history by the owner was the death of a boar on March 12 having taken sick on March 8. This sow, from which the specimens were taken, running in the same pasture, was taken sick and lingered for 21 days, never refusing feed or slops.

The symptoms were cough, nasal discharge, frothing at the mouth and difficult breathing. From the best I could tell by lamplight from postmortem examination I decided pneumonia or possibly mixed infection was the cause of death, as the right lung was almost firm; kidneys and bladder showed no petechia; spleen normal.

This is a pure-bred herd of 60 or more swine, all having been previously simultaneously treated for cholera in November and all running in the same pastures and houses.—J. M. A., Illinois.

Reply—Bacteriological examination of the specimens from the hog sent by you showed bipolar organisms, streptococci and diplococci in the lungs. I believe your diagnosis of "mixed infection" in this particular case to be absolutely correct.—C. A. Z.

DECOMPOSITION PREVENTS DIAGNOSIS OF CAUSE OF DEATH OF CHICKEN.

I am sending you the liver of a chicken for examination. My client has lost 20 in all and more are sick. The symptoms are about the same as cholera. They live for a few days after being taken sick, and then die. The feed and water is good, and the quarters are well cared for. The stools are green and loose, combs purple, and the internal organs other than the liver appear healthy. I think it may be hemorrhagic septicemia.—M. C. McC., Ohio.

Reply—Your specimen was received in a badly decomposed condition. Bacteriological examination revealed saprophytes but no pathogenic organisms. Would suggest you send in a whole chicken of the same flock; either a sick one or one just dead. In the latter case remove the feathers and wrap in cloth saturated with a 4 percent solution of formalin.—C. A. Z.

HEMORRHAGIC SEPTICEMIA IN MULE

I have sent you five tissue specimens and one sample of blood taken from a mule that died. The blood was drawn four days before death. About March 20 the mule became sluggish and lost weight until he died, at which time he was very much emaciated.

The appetite at first was not much affected, but later he ate very little; respiration about 30 and deep; pulse 60 and full, but weak; mucous membranes of a dirty yellowish red color with conjunctiva and mebrana nictatans covered with irregular shaped hemorrhages; bowels slightly constipated and liver congested; temperature was around 101 and 102 at first, but later went up to around 104. He became very stupid, standing with head down and ears hanging. An edematous swelling appeared on the abdomen about one week before death.

A physic was given to start with, then Fowler's solution and nux vomica were given three times daily; 45 grains of sodium cacodylate was given every four days. Later on Flavisol was given daily intravenously and a mixed bacterin was also used.

The mule died April 10 and the postmortem findings were as follows: Blood did not coagulate readily and was black and tarry; lungs congested and filled with frothy fluid; thoracic cavity filled with a serous exudate; heart enlarged and covered with petechial hemorrhages; pericardial sack filled with a serous exudate; liver very much enlarged, congested and friable; the kidneys were enlarged and filled with a serogelatinous exudate and friable; all glands, including the mesenteric, were congested and had a serogelatinous infiltration; the spleen was the only organ that was not easily torn—it being normal in size and firm, but filled with nodules. Some of the nodules had become brown in color and I believe contanied some caseous material.

From the beginning I was suspicious of either infectious anemia or hemorrhagic septicemia. I now have another mule some miles

from this one, showing the same symptoms. Any information you can give me on this case will be appreciated.—J. L. R., Georgia.

Reply—Bacteriological examination of specimens shows the presence of the bipolar organism of hemorrhagic septicemia in great numbers. In accordance with the above findings, I believe your diagnosis of hemorrhagic septicemia in this case is correct.—C. A. Z.

NODULAR DISEASE OR OVINE CASEOUS LYMPHADENITIS.

I am mailing you some specimens from a sheep for diagnosis. Six sheep have been lost in this herd to date, all acting exactly alike. The first symptom as stated by owner is a swelling in the intermaxillary space; about three days later there is complete anorexia, and some blackish diarrhea. Two or three days later the animals become weak and lie around away from the remainder of the flock. When lifted to their feet they go a few steps, stagger and fall. They usually die in six to eight days after showing swelling in the intermaxillary space. There is no cough or nasal discharge.

This morning, when I was called, two were sick with temperatures of 105 and 102.2 degrees respectively. Two were dead and I posted these, both showing identically the same lesions—marked edema in the intermaxillary space and throughout the length of the trachea. The lungs were apparently normal, there were no lung worms. The liver and kidneys had a pale, cooked appearance, and peeled easily. The spleen, rumen, reticulum and omasum were normal. The abomasum and duodenum were markedly congested. There were several small thread-like white worms in the duodenum, three-fourths to an inch in length. Throughout the entire intestines, just under the serous coat, were nodules from the size of a pinhead to pea or larger, irregular in shape and very numerous; these were also found in the mesentery. Smaller ones were black, others greenish, some calcified and others thick and cheesy.

Were the parasites found, the oesophagostoma columbianum? Were the nodules caused by them? Is the disease ovine caseous lymphadenitis? In no case have I found the immediate cause of death or is there some other trouble? What treatment would you advise?

Kindly make a microscopic examination of the nodules and other parts sent and bacteriological examination if possible. The owner thinks of disposing of his entire flock and wishes to know if those apparently well are fit for food.—H. F. F., New York.

Reply—Pathological as well as bacteriological findings indicate that you are undoubtedly dealing in the cases above described, with nodular disease or ovine caseous lymphadenitis. For treatment and more detailed information see the article entitled "Lymphadenitis or Nodular Disease in Sheep," page 46, April issue of Veterinary Medicine.—C.A.Z.

INFECTIOUS ABORTION SUSPECTED.

We are sending two samples of blood from heifers which gave birth to calves prematurely. As these animals are very highly bred the abortions have raised the question between the present and former owners as to whether these animals would react to the complement-fixation or agglutination tests.—L. and S., North Carolina.

Reply—Examination of blood sample No. 1 by the complement fixation test for infectious abortion gave a negative reaction. Blood sample No. 2 was received totally hemolized; therefore serological work with the complement fixation test was impossible.—The agglutination test on both samples was negative.—C. A. Z.

ACTINOMYCOSIS IN COW.

I am sending you a sample of pus for laboratory diagnosis, which was brought to me this morning by one of my clients. He said that the cow from which it was taken has two enlargments just below the eye on the upper jaw on each side. I think that the cow is affected with actinomycosis.—F. A. McC., Wisconsin.

Reply—The sample contained a great number of ray fungi, and therefore your diagnosis is correct.—C. A. Z.

CONTAGIOUS ABORTION IN COW.

Herewith find blood specimen taken from a cow supposed to have contagious abortion. I will appreciate a laboratory diagnosis as early as possible.—D. E. H., Indiana.

Reply—The complement fixation test for contagious abortion gave a weak positive (two-plus) reaction. These findings, however, only indicate that immune bodies against contagious abortion are present in the patient, but does not prove that the cow is at this time suffering from the disease.—C. A. Z.

Parasitology

Edited by MAURICE C. HALL, Ph.D., D.V.M.

Carbon Tetrachlorid for Hookworms in Dogs

A PAPER published in the Journal of Agricultural Research for April 15, 1921, reports the results of tests of carbon tetrachlorid as an anthelmintic for removing worms from dogs. This drug was administered to 30 dogs, the feces being subsequently examined daily for worms passed, and all but one of the dogs being finally killed and examined for worms present postmortem. The results, especially as regards the removal of hookworms, were very promising and indicate that carbon tetrachlorid is more satisfactory for removing hookworms from dogs than any of the anthelmintics heretofore used for this purpose. The drug is furthermore almost as effective as oil of chenopodium in removing ascarids, and if it gives as good results in practice as it has given in experimental test it will be the most satisfactory drug we know at present for the purpose of removing hookworms and ascarids from dogs by a single treatment with any one drug. It is not of value in removing the double-pored tapeworms, species of Dipylidium, a fact which indicates that it would probably be of little or no value against the other tapeworms occurring in the dog. Like almost all anthelmintics, it cannot be depended on to remove whipworms by a single administration, apparently for the reason which seems to account for the failure of other drugs in this respect, i. e., it cannot be depended on to get into the cecum and in contact with the worms. When it does enter the cecum it appears to remove whipworms, as do other drugs of even moderate anthelmintic value.

Method of Administration.

The method of administration which was found 100 percent effective in removing hookworms from the test animals consisted in giving the carbon tetrachlorid in hard gelatin capsules of suitable size for the dose, without purgation, at the rate of 0.3 mil (c.c.) per kilo (2.2 pounds) of weight of dog (or about 2.25 minims per pound), a dose of 3 mils (about 48 minims) for a dog of average size (about 22 pounds). This dosage and method of administration should be adhered to in using this drug in practice. When the drug is given without capsules or in smaller dosage the results are unsatisfactory.

Failure to follow prescribed directions accounts for some of the unsatisfactory results obtained where anthelmintics are said to be unsatisfactory in practice after they have been found satisfactory in critical tests. Fitch has recently reported an outbreak of stomachworm disease in sheep in Minnesota in which the use of the copper sulphate solution failed to stop the losses, the failure being found on investigation to be due to the fact that the veterinarian was using grains of copper sulphate in place of grams or one-fifteenth of the effective dose. Reports have come to us of the failure of anthelmintic treatment in the case of horses, where treatments found successful in experimental test have been found unsatisfactory according to the report of attendants. In this case it is probable that the treatments were properly administered, but anyone who has carefully examined horse manure for strongyles will realize the unreliability of the findings of untrained observers, such as attendants, laborers, etc., along this line. Indeed, specific training and experience along this line is necessary to qualify the veterinarian himself for this work. After suitable anthelmintic treatment for the removal of these worms, the manure for the first day or two after treatment will frequently contain no worms or so small a number that only very close search of all the manure passed will detect them, and the largest number of worms is usually passed on the third or fourth day after treatment, others coming away for several days after this. Since most persons expect the worms to come away the first day after treatment in the case of the horse, as most of the ascarids do in the case of the dog, the failure to find worms on casual inspection of manure the first day or two is apt

to be regarded as conclusive evidence of the failure of the treatment. In another case which has come to our attention the veterinarian gave chenopodium in linseed oil by stomach tube and the animals treated developed symptoms of drench pneumonia, probably due to leakage from the tube in removal.

High Efficiency and Safety of Carbon Tetrachloride.

In the paper on carbon tetrachlorid as an anthelmintic, previous work on anthelmintics for the removal of hookworms from dogs is summarized, indicating that the carbon tetrachlorid is more effective against hookworms than are chenopodium, chloroform, or chenopodium followed by chloroform. It is noted that carbon tetrachlorid is destructive to hookworms, causing more distortion than any of these drugs, half of the body of the worms collected in feces being missing in some cases.

The veterinarian in practice is naturally interested in knowing whether the drug which has been found effective in experimental test is also safe. So far as can be judged from the clinical evidence on 30 dogs and the postmortem findings on 29 dogs, carbon tetrachlorid is as safe as it is effective. Some dogs were given the drug at the rate of 1 mil per kilo or 1.5 mil per kilo, the latter dose being five times the indicated therapeutic dose, and no bad effects were observed antemortem or postmortem, except in the case of one dog which was given 1 mil per kilo without capsules. This dog went down and stiffened out for a short time and then arose and staggered about as if intoxicated for a short time. The animal soon became normal in behavior and appearance, and at the end of over 4 months has shown no evidence of bad effects. The transient toxic effects observed were evidently due to the inhalation of the drug as given, without capsules and in large amount. In view of the fact that the chemical composition of carbon tetrachlorid (CCl_4) is very similar to that of chloroform ($CHCl_3$), it might be supposed that the administration of the drug by mouth would give rise to the acute yellow necrosis of the liver which chloroform causes. However, no such lesions were microscopically visible postmortem even in animals receiving carbon tetrachlorid in doses five times as large as the dose of chloroform which will produce well-marked cases of hepatic necrosis in dogs. At the same time, it is noted that carbon tetrachlorid probably does do some damage to the liver, as it has been reported as causing a toxic jaundice in the case of a person in an occupation where the vapors of carbon tetrachlorid were being constantly inhaled. While this possibility must be kept in mind, the tests on 30 dogs indicate that the drug is safe. The fact that its proposal as an anthelmintic is new requires close observation of its results in practice and published clinical reports of cases where it is used. The liver is the organ of choice for anthelmintic insult, owing to its capacity for retaining and neutralizing toxins and for regenerating and repairing its own tissues.

Only Pure Carbon Tetrachloride Should Be Used.

It is also noted in the paper in question that a pure carbon tetrachlorid should be used, as carbon bisulphid or carbonyl chlorid (phosgene) may sometimes be present. It is doubtful if a trace of carbon bisulphid would be very injurious to dogs, as this drug is used in doses of 6 to 9 drams to remove bots and ascarids from horses. (Phosgene may be present in chloroform; Utz has published a study of the methods of detecting it in the "Pharmazeutische Zentralhalle" of Jan. 4, 1917), but the widespread use of chloroform without serious danger from this compound suggests that good grades of carbon tetrachlorid will be similarly safe so far as the possible occurrence of phosgene is concerned. Dr. Reid Hunt says that it has been found that phosgene may be evolved when carbon tetrachlorid, which is marketed under a trade name as a fire extinguisher, is used against a flame.

The paper on carbon tetrachlorid summarizes the available medical literature dealing with this drug and notes some of the entomological literature. It also discusses the physical characters of the drug and correlates these with the anthelmintic action. The experiments are given in detail and include some tests of mixtures of carbon tetrachlorid with chenopodium and with thymol, the mixtures being also 100 percent effective against hookworms.

History of Carbon Tetrachloride.

In view of the fact that carbon tetrachlorid has received little attention from a therapeutic standpoint for about half a century, the literature mentioned in the article in question is briefly summarized here. It was discovered by Regnault in 1839. Tuson reported it as of value for external application to cancers, but

Ure was unable to confirm this opinion. Blanch reported that when administered internally it gave good results in gout and neuralgia, and in a case of diarrhea, procidentia uteri, prolapsus ani, hysterical and fainting fits and insomnia, in which case it relieved the symptoms and enabled the patient to sleep. Simpson used it as a general anesthetic, but concluded that it depressed the heart more than chloroform did. Smith administered the drug on 52 occasions and found it useful in relieving pain, especially headache, dysmenorrheal distress, tic douloureux, toothache, etc. He found it valuable in mitigating labor pains, the drug apparently not diminishing the uterine contractions. In some cases it was found to induce sleep and temporarily remove the effects of exhaustion of the nervous system. Andrews used it once as a general anesthetic in resection of the hip joint in a weak and anemic patient, but the patient collapsed and had to be revived by artificial respiration; the operation was completed under ether anesthesia. Nunneley found it of value in bronchial catarrh in his own case, the condition clearing up after one inhalation. Morel regarded it as superior to chloroform, but Laffont disagreed with Morel after testing it. Morel found that the pupil of the eye is dilated in the first and second stages of anesthesia, but may contract in the third stage. The Journal of the American Medical Association for July 31, 1909, reports a case where carbon tetrachlorid was being used as a shampoo on a woman 39 years old and a subject of status lymphaticus, in which the woman collapsed and never recovered. This was the first fatality in 30,000 cases where it was used as a shampoo and the only untoward results previously noted were one or two cases of fainting. (There is a possibility here that the carbon tetrachlorid might not have been pure and might have contained phosgene, a powerful heart depressant.) Macauliffe reports carbon tetrachlorid as a safe and effective substance for cleansing the margins of wounds. The British Medical Journal for Sept. 25, 1920, reports a case of poisoning in a girl employed in painting golf ball molds with a paint containing carbon tetrachlorid. The symptoms were vomiting, headache and anemia. The editor notes that frequent inhalations of this chemical may cause dyspepsia of a toxic type, anemia and toxic jaundice, the latter symptom indicative of a deleterious effect on the liver similar to that produced by chloroform, a closely related product. Bishopp regards it as irritating to wounds and reports that some stockmen think it may have killed cattle on which it was used for screwworm infestation. Dunn, on the other hand, prefers it to chloroform for use in cases of screwworm infestation.

As an insecticide, carbon tetrachlorid is less toxic to insects that chloroform or carbon bisulphid, for the insects against which it has been used. During the war it was reported as an effective insecticide for use against lice by a number of writers.

Properties of Carbon Tetrachloride.

Carbon tetrachlorid is a transparent colorless liquid of the specific gravity 1.599 (Regnault) boiling at 76.74 deg. C. (170.6 deg. F.) and it has an agreeable aromatic flavor, an odor similar to quince, at 30 deg. C. (86 deg. F.) it solidifies to a crystalline mass. It is less volatile than chloroform or carbon bisulphid and can and should be obtained chemically pure for medicinal purposes.

AVOIDING TOXICITY FROM OIL OF CHENOPODIUM.

I have been using oil of chenopodium in treating swine for round worms. For a pig weighing around 50 pounds I have been giving 20 minims of oil of chenopodium in one-half ounce of castor oil, and for animals around 100 pounds twice this much. This usually produces excellent results, but very often produces alarming symptoms, and in some cases death of the patient. The animal in such cases appears to be intoxicated. I have also noted a tendency to vomit, which I ascribe to the oily nature of the medicine, and have been able to prevent this often by giving a little sweet milk as soon as the animal shows symptoms of being sick.

All animals are fasted 24 hours before dosing. Do you think that giving the animal a physic, say 24 hours before administering the oil of chenopodium and castor oil mixture, would eliminate this trouble by preparing the intestinal tract? I should be glad to have you advise me concerning these peculiarities, and whether anything can be used to counteract these effects or prevent them.—W. A. K., Illinois.

Reply—In the cases you describe where swine show symptoms of poisoning and in some cases die after the administration of oil

(Continued on page 97)

Queries and Answers

Duodenal Impaction in Mule

On May 2 I was called to the country to see a sick mule, age 5 years, female, and in good condition. This mule had been working regular to a one-horse plow. The illness was first noticed on May 1, when she refused food and at intervals would stretch similar to a horse trying to urinate. On arrival I found the mule lying down, but she was easily aroused. Temperature 102; pulse 70 and wiry; respiration normal but shallow; mucous membranes normal. The mule would occasionally stretch, placing the front feet as far forward and the hind feet as far back as possible. This position was held about two minutes, after which the mule would walk around apparently normal.

I administered one grain of arecoline with one-half grain of strychnine hypodermatically, resulting in free bowel movement. I gave one pint of oil and one ounce of mucoseptone per orem and left instructions for the owner to bring the mule to the hospital that afternoon if there was no improvement. At 3 o'clock the mule was brought to the hospital. Temperature 105; pulse 90 and very hard; respiration very shallow; mucous membranes injected. The stomach tube was passed and a small amount of food syphoned out, slightly fermented. I administered one pound of hyposulphate of soda through the tube. A rectal examination was made which revealed nothing abnormal except bowels practically empty. The mule continued to stretch with no other symptoms of colic. All feed was withheld. My diagnosis was obstipation of small intestines.

The following morning the temperature was 102; mucous membranes normal; respiration shallow; animal occasionally stretching. That afternoon the temperature rose to 106; mucous membranes highly injected; respiration still shallow; pulse 90 and very hard. The animal would lie down a great deal on her left side and stretch out, breathing more labored with occasional groans. When forced to get up she would continue the stretching.

On the third morning the temperature was 101; mucous membranes normal; respiration normal but shallow; pulse 60 and hard; still stretching. Another rectal examination was made and a small amount of soft feces found. Nothing abnormal was detected. Urine analysis showed a large amount of indican and albumin. That afternoon the temperature again rose to 106, with practically the same symptoms of the previous afternoon.

On the fourth morning the mule appeared absolutely normal, with the exception of the occasional stretching. In the afternoon the temperature again rose.

On the fifth morning free catharsis was established. The temperature was 100.5; respiration normal, but shallow; pulse 50 and not so hard. The stretching was not so frequent. The mule remained practically normal during the entire day. Its appetite improved and light feed was allowed.

On the sixth day the mule appeared normal and was sent home. Improvement still continues.

For treatment one pound of salts was given the second day, followed on the third day with one aloes bolus and several doses of potassium acetate. On the fourth day, the potassium acetate was continued with small doses of magnesium sulphate. The potassium acetate was continued for several days and the mule put on a tonic.

At no time did the mule show any further symptoms of pain other than the stretching. A thorough examination of all internal organs was made with absolutely nothing abnormal found except as noted above.

Since this is the first case of the kind I have encountered and being at a loss as to diagnosis I would appreciate any light you might give on the subject.—H. A. B., Louisiana.

Reply—First of all we desire to compliment the doctor on his splendid case report. The above query describes as well as the best textbook could a typical case of "duodenal im-

paction." Your diagnosis was quite correct but not entirely specific. The stretching described is quite characteristic of impaction in the anterior portion of the intestines. In impaction of the deodenum there is always more toxemia or autointoxication than in other impactions, due to the fact that deficient biliary secretion is the etiological factor in the case, and bile is the natural intestinal antiseptic as well as the natural laxative; consequently, in its absence it is easy to understand that toxins in great quantity will occur in the intestines; hence the large amount of indican in the urine, etc. There is usually a dirty appearance of the membrana nictatans and considerable dullness of the animal as a further result of the autointoxication.

It is quite characteristic of duodenal impaction that the patient responds readily to all types of cathartics, subcutaneous, oleaginous, saline or aloetic; yet the illness continues, sometimes for a couple of weeks. There is only one other type of impaction where as ready response to laxatives or purgatives occur and that is "cecal impaction," but with this a rectal examination easily discloses the offending portion of the intestines.

Duodenal impaction will cause an animal to appear "mighty sick" and be very stubborn. It will cause the owner and the veterinarian much anxiety, and yet it is rarely if ever fatal unless the animal is injured by the treatment.

Treatment—We use and advise first the use of the quick-acting purgatives and other purgatives to keep the bowels as empty as possible, thereby holding the toxemia down to its lowest possibilities. We go strong on mineral oil (liquid petrolatum) in these cases for its lubricating, macerating and fecal softening properties, giving usually a quart night and morning. However, the real curative part of the treatment lies in re-establishing the secretion of bile up to its normal quantities.

To do this we like calomel in 15-grain doses combined with bicarbonate of soda in 1-dram doses every 1 or 2 hours. Should a reasonable total amount of calomel fail to produce the desired result, we use dilute nitric acid in one-half-ounce doses diluted every 6 hours. In some very stubborn cases we have used corrosive chloride of mercury in 5 and sometimes 10-grain doses well diluted in water three times daily.

Intestinal antiseptics such as phenyl salicylate (salol) in 2-dram doses every 4 hours, or naphthalin or betanaphthol in 2-dram doses three times daily tend to lessen autointoxication and its resulting weakening effect. Intestinal stimulants such as a combination of nux-vomica, physostigma, pilocarpus and colchicum in one-half dram doses of each diluted, every 1.5 or 2 hours is also very useful.

Gentle walking exercise for periods of about 20 minutes every 2 or 3 hours, and, if the patient will eat, laxative food, such as bran mash containing some salt and linseed meal, grass if in season, a small quantity of alfalfa or other laxative diet, tend to aid in the recovery. Water (not too cold) should be allowed ad libitum. After recovery, the patient is quite weak and is apt to require 2 or even 3 weeks for complete recovery.—E. L. Q.

THE CROW AND CROW POISON.

A local paper has published an account of the method used by a state game protector stationed here to exterminate crows. On a nearby game preserve the Hungarian or ring-necked pheasants became so weakened by hunger last winter that they fell easy victims to the crows, who killed and ate quite a number of them.

According to this article the protector saved the remainder of the pheasants and put the crows to rout by spreading poisoned corn on the ground, killing the crows in great numbers but in no way harming the pheasants. He does not state the name of this poison, but says that it is commonly used by game wardens for this purpose and that it is harmless to birds having a crop. Can you give me any information as to what this preparation may be? Would it not be poisonous to many species of song birds? Do crows have crops?—L. G. D., New York.

Reply by Dr. B. F. Kaupp—I had a crow sent to my laboratory in order that I might make an examination of its visceral anatomy and answer the above question. A crow has no crop and I have made a photograph that you might reproduce a picture of the visceral organs for the benefit of those readers of VETERINARY MEDICINE who are interested in this question. 1, is the pharyngeal region; 2, the larynx; 3, the esophagus. It will be noted that there is no crop. In a fowl at a point just below 3 there is a sacculation, but this is absent in the crow. There is not even a rudimentary crop. The food entering the mouth passes into the pharynx, then into the esophagus, and passing through the

esophagus enters, at once, the proventriculus (4), or first portion of the stomach. The right lung is removed to show that the esophagus continues throughout in the same caliber. The proventriculus was rather small for an adult male crow as compared to the similar organ

Visceral Anatomy of the Crow (Kaupp).

of a full-grown fowl. The food from the proventriculus passes into the gizzard at 5 where it is ground by contraction of the large powerful muscles and aided by a small amount of grit. The muscular walls in this bird seemed quite thick. 6 is the duodenal loop, and lodged between its branches is the pancreas. 8 is the free portion of the intestines. 9 the heart, and 10 the trachea.

Some years ago I was determining the exact dosage of sulphate of strychnin in adult fowls (chickens) and found that a hen could, with a full crop, take 1 grain of strychnin given in the form of a hypodermic tablet and show no ill effects from it. In fact, we were about to decide that this was the proper medicinal dose for a 6-pound hen when we discovered the fact that if we gave this same dose in solution in water to a 6-pound hen which had not eaten any food for at least 24 hours that the strychnin solution passing directly to the proventriculus and gizzard would be absorbed quickly and the bird show symptoms of strychnin poisoning and in some cases death. We then started on a new line of experiments and came to the conclusion that taking all classes of cases into consideration that the dose of strychnine sulphate for a 6-pound hen was from one-fifth to one-fourth of a grain. Now in the crow, with the digestive arrangements as it is, any strychnin would go into solution and be absorbed very quickly unless mixed to a considerable extent with food and thus limit absorption. Beer drinkers are enabled to stand large quantities of the liquor if taken along with food and this also applies to wine and whisky. The mixing of the liquor with the food prolongs or makes absorption slower. Now feed a crow a lethal dose for such a digestive tract and if a hen should get it unless the dose was too enormous you will, or at least I would expect you to find that the crow would be killed but that the chicken would not. I think this also explains why hawks can be killed by a small amount of strychnin mixed with molasses and this daubed on the down on the back of the head of a chick just dead and the chick laid where a hawk will get it. The hawk always pulles off the head of the chick first, or at least I am told this, and, of course, gets the poison. He dies probably because he possibly rapidly absorbs the strychnin for he has no crop though I cannot say this positively, but suggest the thought.

Reply by E. W. Nelson, Chief of the Bureau of Biological Survey, U. S. Dept. of Agr.—Strychnin is recommended for use against the crow because of its quick action and because of the fact that gallinacious birds, including quail, pheasants and domestic poultry are to a marked degree immune to its action. Other birds, however, are susceptible to it, and wherever use is made of it great care should

be taken to avoid killing of other species. The use of whole corn as a bait is one way to avoid killing small species of birds. In addition one should scatter the bait sparingly and only in those sections where crows are doing severe damage.

Reply by Llewellyn Legge, Chief Division of Fish and Game Conservation Commission, New York.—Regarding a poison which may be strewn around promiscuously that will kill crows and not kill pheasants or song birds, I will say that there is no poison that I know of that would not kill song birds. The state of Pennsylvania has experimented with a formula which will kill crows and will not kill pheasants, but, as to song birds, it is deadly to them. The reason for its not killing the pheasant is that the pheasant has a craw the same as a chicken, but the crow having no craw, it acts direct and kills them.

"Corn is the bait usually employed in poisoning crows, and it is generally prepared by simply steeping the grain in a strong strychnin solution. If made, however, according to the following directions it will kill more quickly and its effectiveness will last for a considerable time when exposed to weather:

Corn	20 quarts
Strychnin (powdered)	1 ounce
Starch	2 tablespoonsful
Water	1.5 pints

"Put the starch and the strychnin in the water and heat to boiling, stirring thoroughly after the starch begins to thicken. Pour this mixture over the corn and stir till every kernel is coated. The seed may then be spread out and dried." This, as well as other methods for exterminating crows, is given in Farmers' Bulletin No. 1102, entitled "The Crow in Its Relation to Agriculture," copies of which may be obtained free from the Division of Publications, U. S. Dept. of Agr., Washington, D. C.

PARROT MOUTH AN UNSOUNDNESS.

Is "parrot mouth" in the horse considered an unsoundness in law? In my opinion it is. My brother purchased a stallion guaranteed to be sound; in an examination after the purchase he was found to have a pronounced parrot mouth. He also has a yearling colt which was sired by this same stallion which is in the same condition; he is very sick of his bargain. Dr. A. T. Peters says there is nothing in the stallion registration law which prevents him being licensed to stand for public service.—M. C. E., Illinois.

Reply—Regarding the question whether or not a "parrot mouth" in a horse is considered an unsoundness, will say that we can find nothing specific in regard to the condition in American law. In English law the condition is specifically declared not to be an unsoundness. However, to get back to American law, we believe that with the right kind of a lawyer prompted by the right kind of a veterinarian that the condition, especially in a stallion used for breeding purposes could be proven, to be an unsoundness, inasmuch as the plaintiffs side could take the stand and claim that any deviation from the normal constitutes an unsoundness. A parrot mouth being a deformity and making it impossible to eat grass or graze, would cause it to be considered an unsoundness. Then again, in the case of your brother, he has additional evidence of a progeny of the stallion in question showing the same condition, evidently inherited.

There is nothing specific in American law but it would be possible to win such a case by convincing the judge and jury that the animal being sold under a warranty of soundness was not really sound. On account of this deformity it would prevent him from grazing and the defect would possibly be transmitted, if not to all, to a considerable number of his progeny. Such an animal should be considered as being unsound.—E. L. Q.

BOTRYOMYCES INFECTION IN MULE.

I have a case which I have been treating for the past six or seven months and have never gotten satisfactory results. The patient is a 5-year-old mule in fine condition; when I first saw her she had a growth on the outside of the leg at the fetlock joint about one-half the size of a man's head or larger, one in front of the shoulder, and one on the cheek just posterior to the angle of the mouth; the last two were not so large.

I am not in a position to say definitely just what kind of a growth this should be termed, but from clinical observation I would call them sarcomas; they are very vascular, similar to an exuberant granulation.

This animal was cast and growths removed, making sure, as near as possible, to get all of the growth. Then I applied the actual cautery, following in a few days with dry dressings, healing lotions, etc., with no results.

The growths began to appear again and I ordered the mule brought to the hospital, I removed all of the growths with the knife, ap-

plied the actual cautery and resorted to caustics. The following prescription was used:

Hydrochloric acid ..... ℥j
Bichloride of mercury .....℥j
Alcohol qs. ad. ..... ℥j

This was applied frequently together with Dr. Quitman's prescription in Veterinary Medicine for exuberant granulations, with fairly good results. The place on the cheek healed over, the places on the ankle and shoulder were reduced considerably in size, and the patient went home after 30 days, using the same treatment. Now the owner informs me that the place on the cheek has revived again; also the growths on the ankle and shoulder are growing larger, and there are one or two more new ones.

I am sure the owner gave this animal the best of care while at home and do not feel that he is at fault. I also gave this mule several injections of Fibrosol. I am at my wits' end in regard to treating this mule, and have used everything I can think of.—R. E. C., Georgia.

Reply—There is scarcely any doubt but what you are dealing with a case of botryomyces infection. The condition is known as botryomycosis; it is the same fungi that causes scirrhous cord. The technical term for the disease is botryomycomata and for the organism it is botryomyces equi.

These cases usually yield nicely to iodid of potash. Your patient will require about two dram doses, three times daily. In addition, where there is breaking down of these lumps, tincture of iodin, full strength, should be injected into the area. You might also inject some by means of a hypodermatic syringe, into the unbroken lumps. If this treatment does not bring about recovery or if you are still in doubt as to the diagnosis, send in specimens of the growths for a laboratory diagnosis.—E. L. Q.

GOITER IN HORSE.

A friend of mine has a saddle horse with goiter about the size of a small fist. I am unable so far to reduce it in size. Can you advise me of any treatment that would be successful.—J. E. S., Ohio.

Reply—Such ailments in the horse are usually not at all serious. They rarely reach a large size, or a size sufficient to interfere with some of the vital functions as they do in dogs and man.

For your patient two dram doses of potassium iodid or one-dram doses of calcium iodid are recommended, either one to be given in solution three times daily, about one-half hour to an hour before feeds. In prescribing the above dose it is assumed that the animal is of adult age and weighs about 1,100 to 1,250 pounds.

Externally, absorption of the enlargement may be promoted by a thorough inunction of about a 15 percent oleate of mercury twice daily. Treatment may have to be continued for several months and should the enlargement decrease to normal, in order to maintain the effect, or, in other words, to prevent the goiter from reoccurring it is necessary to give a dose of either the above drugs two or three times weekly.—E. L. Q.

NERVOUS FORM OF HEMORRHAGIC SEPTICEMIA IN CATTLE.

Myself and a neighboring practitioner are losing cattle sporadically from what appears to us to be a very obscure affection. I might say that most of the cases lost by us have been town cattle, although some of them have had access to pasture. In general I have found the disease to present the following symptoms, and this description will agree with my neighbor's cases, according to his descriptions to me at various times.

Upon being called, I found this condition beginning in about three ways, but ultimately terminating the same. First, the animal is found to be affected with what appears to be a simple acute bloat. The usual treatment is given, including a saline purge with aromatics, and in 12 hours these cases are better. In about 12 hours more I am called again and the animal is found to be in a very critical condition, down and powerless to rise, or it may rise and stagger around, falling to the ground in mild spasms. While down the animal stimulates a case of milk fever, but is conscious and may eat and drink, although it is usually very nervous. These cases respond to no treatment that I have tried and invariably die. I may add that I had one case of the above, after acute bloat, that got very nervous, inco-ordinate, etc., but did not go down. This case made a complete recovery.

The second type of what appears to be the same disease begins with what appears to be atony of the rumen, and the usual treatment is given with no results except bowel move-

ments. These cases eventually go down and stimulate a cow with parturient paresis, as before stated. They are very helpless and somewhat nervous, but may eat and drink a little. They do not respond to treatment, eventually dying.

The third type of this condition is found to be down upon arrival, extremely nervous, and absolutely unable to rise, although they may flounce around considerably. They do not show any improvement under treatment, dying in 24 to 48 hours.

The temperature in all of the above types is usually normal or nearly so; heart accelerated; respiration about normal.

My neighbor has autopsied several of the above cases, and in all cases finds hemorrhages on the heart. I autopsied one case which does not exactly fit any of the above descriptions, although it was similar, and found hemorrhages on the heart.

I would like to know what this condition is. We have thought that it may be botulism, or perhaps a typical hemorrhagic septicemia. Please give me your opinion as to cause and treatment.

I may add that the disease bears apparently no relation to parturition or pregnancy.—H. H. D., South Carolina.

Reply—You are probably dealing with the nervous form of hemorrhagic septicemia. Should you have any more of these cases, we would suggest that you examine the brain and spinal cord for lesions of this disease. We would further suggest that it might be well for you to send some of the blood and specimens from any organ or tissue showing pathological lesions, for laboratory examination. In the meantime you would be justified in advising the use of hemorrhagic septicemia prophylactic measures. In this disease it is not uncommon to have temperatures running normal or even sub-normal or highly elevated, the same as it occurs in botulism.—E. L. Q.

TREATMENT FOR MALNUTRITION OF COLT.

One of my clients has a very fine mare that foaled about this time last year and the colt died after two or three days. After examination he found that the mare did not have any milk in her udder and never did have any; consequently, the colt starved to death.

I instructed the owner to feed this mare a mixture of bran, shorts and oats. She is also running on a good pasture. Is there any drug or treatment that I can use that will stimulate a flow of milk? This mare is due to foal in a few days. If the same condition exists this time, how would you suggest feeding this colt? In what proportion would you use cow's milk? Can you give me a successful treatment for azoturia?—R. E. C., Georgia.

Reply—Drug stimulation of mammary secretion is not very satisfactory. However, pilocarpus in about 1-ounce doses of the fluid extract, three times daily, for the mare has the highest reputation as a galactagogue. Malt liquors, such as beer or malt extracts (which presumably are a thing of the past) also have some reputation in that regard.

The method to be recommended is the administration of the pilocarpus, and a thorough massage of the mammary gland two or three times daily, for a period of 15 or 20 minutes, being careful not to bruise it. After the birth of the colt, allowing the colt to perform this function, will take the place of hand massage. Commencing at least two weeks before the birth of the colt, the mare should be fed on as succulent food as possible. This should be continued for 3 weeks after parturition.

In some cases it becomes necessary to artificially feed the colt cow's milk, to which is added during the first week one-fourth part of lime water and after the first week one-eighth part of lime water, slightly sweetened and about blood heat. The colt being raised on cow's milk should be watched carefully for constipation. Should this occur, 2 to 4 ounces of castor oil should be administered and thereafter a small amount of linseed oil may be thoroughly mixed with the cow's milk. This latter will prevent further attacks of constipation. The colt should be fed every 2 or 3 hours at first.

There is no sure cure for azoturia. However, country cases of azoturia are much more amenable to treatment than are city cases. In my own practice I prescribe potassium iodid in two-dram doses every 4 hours for the first 24 or 48 hours, after which I give it less often, according to the degree if improvement in the patient. When you first get the case if the patient is delirious, give 4 drams for the initial dose and repeat in an hour if necessary to control the delirium.

Sodium chloride and sodium bicarbonate in 2 or 3 ounce doses of each every four hours is also useful.—E. L. Q.

Pointed Opinions on Live Topics

By READERS of VETERINARY MEDICINE

Treatment of Blackhead in Turkeys

H. M. WEGEFORTH and P. Wegeforth in an article in the Journal of Pharmacy and Experimental Therapeutics, 1921, Vol. XVII, No. 3, p. 249, state that for the early diagnosis of blackhead in turkey it was found that careful inspection of the droppings each day was of great assistance. With the onset of the earliest symptoms which usually include slight lameness, the droppings become liquid, frothy and frequent.

One of the authors is a turkey-rancher, and suffered severe losses from the disease. After trying many drugs and finding them useless, their attention was drawn to Theobald Smith's researches on the etiology of enterohepatitis, and to his conclusions that the disease is an amoebiasis. Knowing of the good effects of ipecac, in the treatment of human amoebic dysentery, the Wegeforths determined to try its effects in the treatment of this somewhat similar disease of turkeys.

A routine was established whereby any bird showing symptoms of blackhead was immediately separated from the rest of the flock and given by mouth ten drops of the fluid extract of ipecac, three times a day. This dosage was continued for three days, after which it was decreased to ten drops twice a day for three days, and, later, once a day for the same period. By this means 29 out of 32 affected young birds were restored to health. Of five old birds treated, three recovered.

To control these results the authors arranged an experiment. They obtained 18 apparently healthy, nearly full-grown turkeys from another ranch. To each of these was fed an equal quantity of the ground caeca and liver of a turkey dying the same day of black head. The birds were then divided into three equal groups and placed in three pens formerly used for quarantining turkeys with the disease. To each of the birds in the first pen were given ten drops of fluid extract of ipecac, by mouth once a day for three days. The turkeys in the second pen were fed with a mash containing three teaspoonfuls of the powdered ipecac, to the quart for three successive days, and this they ate readily. The third pen was the control one.

Of the turkeys in this control pen four died of blackhead within two months, the other two birds of the pen remaining healthy. None of the birds of the other two pens fell ill of the disease, although one died from some other cause. The birds were kept under observation for several months subsequently.

As the dosing of individual birds is difficult and tedious, the authors replaced the routine treatment of infected birds, recorded above, by the administration as a prophylactic of powdered ipecac, with the food to all the birds on the ranch. A teaspoonful of the powdered drug for each unit of twenty birds was mixed with the food twice a week, no difference being made for the age or size of the turkeys.

In consequence, the ranch was cleared of the disease, which failed to make its re-appearance during the year which followed the prophylactic administration of ipecac with the food.—H. E. H., in Veterinary Record.

INFLUENZA WITH COMPLICATIONS.

A bay gelding pony, 5 years old, had influenza which I treated, and he was convalescent in three weeks. One morning he was very lame, and could hardly walk. Laminitis was diagnosed and treated with hot packs to both fore feet; sodium bicarbonate and potassium nitrate were prescribed in the drinking water. He apparently recovered and was shod. He was rested about four days after shoeing, when he was noticed to be lame again. The right front leg was swollen and very tender from about 5 inches above the knee to the middle of the metacarpus. The tendon sheaths had become invaded with the toxin, if I may so call it.

I prescribed hot fomentations one hour at

a time as often as possible, but not less than three times a day; after fomenting I had lead lotion with arnica applied on cloths and fixed by a bandage and kept wet until the next time for fomenting.

The acute stage passed, but the sheaths remained distended and slightly painful all the time. A biniodide of mercury (1-8) blister was applied. It did not help. Firing in lines was advised, but the owner, through sympathy and sentiment, did not like it, but was persuaded and the operation resorted to. The operation proved quite successful as all soreness and lameness disappeared. The animal was put to light riding exercise. In a few days his left front leg had become affected in the same manner as the right one had been. The same line of treatment was resorted to, and the animal has been working over four months and is quite all right.—Ernest F. Jardine, V. S., Government Veterinary Surgeon, St. Kitts, British West Indies.

Comment—This was, in our opinion, a "mixed infection" type of influenza commonly known as "rheumatic influenza," quite common in the larger cities of the United States, especially in horses which have gone through stockyards or large sales centers.

The collateral infection indicated in the foregoing case report seems to be a streptococci infection. We have successfully treated many such cases by the subcutaneous injection of sodium cacodylate and the oral administration of sodium salicylate (or other good antirheumatic) with favorable results in five or six days to two weeks and without blistering or firing.—E. L. Q.

INTRADERMIC TUBERCULIN REACTION INTERPRETATIONS.

If there is any disadvantage in the intradermal tuberculin tests it exists in the difference of opinion among veterinarians in their diagnosis and interpretation of results. The typical intradermic reaction is usually so positive as to leave no possible doubt as to the diagnosis, but there is such a wide range of reactive swellings varying in size, shape and consistency, that differences of opinion are often entertained as to whether the animal should be considered a reactor or not.

The typical reaction might be described as a hard, irregular shaped swelling of rubber-like consistency, somewhat hyperthermic, and painfully sensitive to pressure. Its size may vary from a kidney bean to a goose egg or even larger. However, I have frequently noticed large diffuse semi-soft swellings of a strictly edematous nature, with perhaps a small area of hard swelling embedded in the diffuse swellings. At other times the edematous swelling only is observed. These swellings may vary from the cold non-inflammatory type, to the hot inflammatory edema. Such swellings needless to say are very confusing, especially remembering the wide range of possibilities, and often make diagnosis uncertain. On incising such a swelling the intradermal and intracellular tissues surrounding are found to be injected with a serohemorrhagic infiltration. I examined some of the exudate bacteriologically and found some B.coli, and other bacteria probably non-pathogenic.

I have met medical men who consider some of the practices used in veterinary medicine, to be very crude and antiquated in the light of modern investigation and scientific knowledge. They preach asepsis, and practice it, too, especially when vaccinating or inoculating with serum, or making hypodermatic injections. In army or municipal work they use every possible aseptic measure when they are injecting large numbers of people.

These doubtful edematous swellings, are, I believe, very frequently caused through lack of antiseptic precautions when injecting large herds. Just the smallest particle of fecal material on the needle or the point of injection may reach its way into the intradermal tissues, remain there, and the bacilli multiply and set up the inflammatory edema, which may diffuse through the sub-caudal fold and set up this diffuse confusing swelling. The fact that bacteria may sometimes be found in the exudate tends to prove that they are there through contamination during injection.

To prevent the possibility of this edematous swelling occurring obviously antiseptic methods while injecting will assist. It means a little extra time but the results prove its worth. In human technic, the injection region is first painted with tincture of iodine (we could do this with little trouble) and the needles are sterilized before being used again. To sterilize our needles after each injection would be impracticable, but they should be immersed in an antiseptic or, better still, wiped off on a cloth soaked in some antiseptic solution. Such procedure seems, in my small experience, to lessen the number of these confusing edematous swellings.—Arthur H. Bryan, V. M. D., Baltimore, Md.

Comment—We have always disapproved of the non-aseptic method of making intradermal tests

and believe as stated in the above article that such may account for many false reactions. To quickly and surely sterilize the needles while in use we flash them several times through a match flame or a candle flame may be used; then wipe off with sterile cotton or gauze.—E. L. Q.

USE OF DIONIN, IRON PREPARATIONS AND COMMON CLAY.

I am submitting several prescriptions that I have given a thorough trial and have found them to be very reliable in veterinary practice.

(1) Dionin, an opium derivative, has been very reliable, and has been used by the medical profession for some time. It is indicated in the treatment of keratitis and injuries to the globe of the eye. My treatment has been as follows: Twenty percent solution of argyrol dropped in the eye twice daily for four days; after discontinuing the argyrol use the following prescription:

℞ Dionin (2 percent sol.) ..... ℥j

Sig.—3 to 5 drops in the eye there times daily.

(2) We all know that certain preparations of iron are very good styptics and very useful in arresting capillary or slight hemorrhage, but the sequel following its use is tissue slough. To prevent tissue slough we add glycerin as follows:

℞ Tincturae ferri chloridi..... ℥jjj
Glycerini q. s. ad..... ℥j

M. Sig.—Apply to parts with cotton.

(3) The following treatment may seem ridiculous, but I have had splendid results with the use of common blue or red clay in the treatment of open joints. Wash off the joint with an antiseptic solution; apply wet clay to the joint twice daily; cover with derby bandage; give stimulants and note the results.—W. J. Kiff, D. V. M., Paris, Ky.

RETAINED PLACENTA OF COWS.

Retained placenta is one of the problems that all veterinarians come in contact with, especially in the cow. It is not necessary to mention the causes of it, such as abortion and retained placenta where there is no abortion; of course, I know some contend that the bacillus abortus is always the causative agent, but I think not.

Of late years I always put on a sleeveless shirt when I remove the placenta and believe it is the only way it can be removed successfully, as even then the arm is too short to reach the anterior extremity of the uterus. In cases where for any reason I cannot remove all of the placenta I place a capsule (uterine) well down in the uterus and usually break it up. I also administer in the feed one-half teaspoonful of dried sulphate of iron twice a day. In fact, I always give ferri sulphas to a cow with any abnormal discharge from the vulva, as it in my experience nearly always corrects it.

Of late years on general principles I always give in addition a double dose of hemorrhagic septicemia bacterin. The system seems to require iron, and, in fact, I believe in a large number of cases the want of minerals is the cause of abortion in animals, as cows are not only milked but have also to nourish a fetus and it must be a great drain on the system. Some vegetations no doubt furnish enough minerals but some not near enough.—B. F. Ward, M. D. C., Glenwood, Iowa.

INFECTION FROM DEHORNING.

In regard to the communication by C. M. M., Maine, in the June issue concerning infection from dehorning, if he will trephine the frontal sinus and irrigate with a mild solution of potassium permanganate and sodium chloride he will find that they will recover in short time and make a more thorough and complete recovery than when treated by other methods. It is a very simple operation to trephine the frontal sinus of the bovine, taking only a few minutes to open both sinuses.—R. F. Reeds, Illinois.

VALUE OF ANTISCORBUTIC VITAMINE.

The antiscorbutic vitamine is an essential dietary constituent for those species of animals, including human beings, monkeys and guinea pigs, known to be susceptible to scurvy. Scurvy has not been diagnosed with absolute certainty in any other animals than these, and while positive statements cannot be well founded on such negative evidence, it does not appear that farm animals are readily, if at all, susceptible to this disease. Pigs and calves can be reared to maturity and successful reproduction secured on rations that will induce scurvy in guinea pigs in four to five weeks. A ration of hay and oats, upon which horses can be kept indefinitely, is one of the standard rations used in the experimental production of scurvy in guinea pigs. Evidently if farm animals need the vitamine at all it is only

in such small amounts as to be of no practical importance to the veterinarian.

However, the occurrence of the antiscorbutic vitamine in animal products is of significance to the animal feeder, since the value of such foods in human nutrition is involved. Animal tissues seem to be poor sources of the vitamine in so far as they have been investigated. While meat seems to have some potency in warding off human scurvy when consumed in considerable amounts, no antiscorbutic properties have been demonstrated with guinea pigs. Fresh milk has a feeble antiscorbutic power which seems to depend upon the character of the rations from which it is produced. Summer milk made on pastures seems to contain three to four times as much antiscorbutic vitamine as winter milk made from dried fodder. Dried seeds and dried grasses are very poor in this vitamine, while fresh green vegetables of all kinds are rich in it. It seems that even the process of ensiling corn destroys much of the vitamine contained in its stalks and leaves. Dried and condensed milks have only a low and uncertain value as antiscorbutics, depending mainly upon the duration of desiccation and less on the temperature used. When milk is dried in a few seconds at 230 degrees F. it still retains most of the vitamine content, but when pasteurized for 30 minutes at 140 degrees C. the vitamine is largely destroyed.—Prof. H. H. Mitchell, Division of Animal Nutrition, University of Illinois.

CESAROTOMY OF COW.

That Cesarean section in the cow is a comparatively safe operation and one well worth performing in cases of impossible natural delivery is, I believe, proven from my personal experience.

The cow whose picture is shown in connection with this article was my third operation of this nature in cows, two being successful and one terminating in death. For the latter there were extenuating circumstances, as the operation was delayed until the animal was in a very much exhausted condition.

My procedure is similar to the method of performing the operation in sows. The cow illustrated was about three years old, and this was her second calf. The operation was performed under difficult conditions as she was out in an onion pasture one-fourth mile from the barn and unable to be taken to the barn. I operated on her April 5 at 10 o'clock at night, lighted only by a lantern and a flashlight. She grazed on the following day and on the second day after the operation she walked a quarter of a mile to her stable. On the eighth day after the operation she was brought to my hospital over a dirt road in a

Cesareanized Cow 34 Days After Operation.

wagon, a distance of 9 miles. The photograph was taken 34 days after the operation. The cow is doing well and is giving three gallons of milk daily.—L. J. Hinson, D. V. M., Newbern, Tenn.

STALLION HAS THREE TESTICLES.

I have been practicing about 30 years and have castrated by actual records 5,026 studs of all ages from 9 days to 22 years and with all kinds of complications.

Recently I castrated a 4-year-old horse which had three well-developed testicles. On examination I found that there was an inguinal hernia of the right side about 3 inches below the internal abdominal wall in the inguinal canal. Of course, I had never seen such a large scrotum in my life for a horse of his age. I pushed the intestines back up in the abdominal cavity and still I felt this extra hard mass in the scrotum and could not understand the situation and told the owner there was something that I had never seen in all my experience.

He said that he had several people examine the animal, and that they said he was ruptured, and, of course, could not castrate him. I told him I did not know what the outcome would be, but according to my judgment the colt had three testicles besides being ruptured, and the operation was going to be dangerous.

He said that as the stallion was of no service to him in that condition to do what I thought best, but be sure to castrate him as

he was tired of being bothered with him. I then proceeded to castrate him and found as I have stated.

If any one questions this report they can write to John McCarley, Bullocks Creek, York County, S. C. His three sons can also testify to the truth of the foregoing statement.—J. E. Cornwell, Chester, S. C.

TWO MILKWEEDS POISONOUS TO LIVE STOCK.

Two species of whorled milkweed quite widely distributed in this country have been found, in recent studies conducted by the United States Department of Agriculture, to be poisonous to stock, though they are not so harmful as the extremely poisonous whorled milkweed, Asclepias galioides found in the southern intermountain region, and tests indicate that if grazing animals are closely confined to them injurious results will follow. One kind, known to science as Asclepias pumila, and found in the plains regions east of the Rocky mountains, is about one-third as toxic as Asclepias galioides; the other, A. verticillata, variety geyeri, which grows in the Mississippi valley, is about one-tenth as toxic. A description of these two species and a record of the exerimental work conducted with them is contained in Department Bulletin 942, just published by the department. The poisonous properties of the whorled milkweed, A. galioides, are discussed in a previous publication, Department Bulletin 800.

Asclepias pumila may be called low-whorled milkweed or Great Plains whorled milkweed, according to the bulletin. The stems, which are often branching, are 3 to 12 inches high, tufted, and covered with fine hairs. It is found in adobe draws, in dry plains, and in foothills from southeastern Montana and southwestern North Dakota to the Texas Panhandle and central New Mexico. It is most abundant in the plains of Colorado. It has not spread widely, but is usually found in small patches in draws.

It was found that sheep fed on this milkweed develop weakness in the hind quarters which results in a staggering gait. There was in most of the cases depression, and in some evident trembling, but the staggering was universally present and was particularly noticeable. This symptom continued for several days, the pulse growing weaker and more rapid. In some cases the animal recovered, showing no serious after effects, but in cases which proved fatal the symptoms continued for from 7.5 hours to 5 days. High temperatures developed, and the immediate cause of death was respiratory paralysis.

The other weed, Asclepias verticillata, variety geyeri, is a variety of the whorled milkweed of the eastern United States, the material studied being obtained in the Mississippi valley. A. verticillata is distinguished by its long, fibrous roots and smooth pods, and the variety geyeri has numerous adventitous buds on the roots. It developed symptoms in live stock typical to those caused by other poisonous milkweeds, including weakness, especially marked in the hind legs, staggering, weak and rapid pulse, labored respiration, dilated pupils, increased temperature, bloating, spasms, and running movements. These symptoms with sheep appeared in from 14 to 20 hours and continued from 1 to 4 days.

The bulletin points out that the losses by whorled milkweeds are for the most part caused by eating the leaves rather than the stems. Stock raisers, it is said, should become familiar with these milkweeds so they can identify them and guard against pasturing their stock, especially sheep, on range where they are found growing in large numbers and suitable forage is scarce.

NUTRITIVE VALUE OF WHITE AND YELLOW CORN.

The differences in color between the different varieties of corn fed to live stock in this country are so marked as naturally to raise the question whether any nutritive differences are associated with these color differences. Especially is this true of the varieties of white and yellow corn, since all of the common varieties of corn are either colorless or are colored some shade of yellow. Among farmers frequently very pronounced opinions are held as regards the merits of white or yellow corn as stock feed, but chemical analyses and feeding experiments have until recently failed to afford any basis for favoring one or the other colored grain.

About a year or so ago, in connection with some feeding experiments on rats, it was found at the University of Wisconsin that yellow corn contains considerable amounts of the vitamine called "fat-soluble A," found so abundantly in butter, while white corn was practically devoid of this dietary factor. The

possibility immediately presented itself that when fed with feeds poor or entirely deficient in fat-soluble A, white corn might be distinctly inferior to yellow corn. The only common farm animals to which such rations might be fed are swine, and possibly poultry.

Last winter a feeding experiment was started at the University of Illinois to determine whether the lack of "fat-soluble A" in white corn discounted its value as a stock feed as compared with yellow corn. Eight sows were selected and bred and were fed throughout their gestation and lactation periods, four on white corn, tankage and white corn bran, and four on yellow corn, tankage and yellow corn bran. The sows were fed as nearly in proportion to their weight and the weights of their litters as possible, and have consumed so far closely comparable amounts of feed. The litters from the white corn were in every way normal, and up to the present have grown at practically the same rate as the litters from the yellow corn sows. The condition of the sows in the two groups throughout the experiment has also been closely similar. The work will be continued with the pigs after weaning and the sows will be bred again on the same rations, and the growth and condition of their second litters followed. In this way, it is hoped to obtain fairly conclusive information on the problem under investigation.

Obviously, however, it is very premature to formulate conclusions now. The experiments are being controlled by rat feeding tests, which clearly indicate that the two varieties of corn used are in fact widely different in their content of the vitamine, the white corn being markedly deficient in it.—H. H. Mitchell, Professor of Animal Nutrition, University of Illinois.

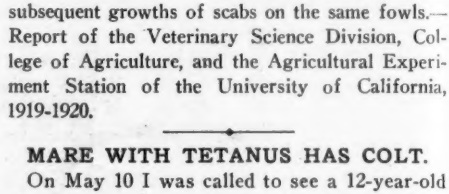
CHICKEN-POX (EPITHELIOMA CONTAGIOSUM) VACCINE.

In the past year the demand from poultrymen for chicken-pox vaccine has been greater than in former years. Although the results obtained in the field from the use of this vaccine have been satisfactory, experiments have shown that it will not protect against severe artificial infection 30 days after vaccination in more than 50 percent of fowls so treated. Experiments have been conducted in an effort to develop a vaccine or method of administration that will protect against severe artificial infection in a large percentage of cases, and also a method by which the vaccine or virus may be standardized.

Vaccine prepared from second and third growths of scabs was found to be as potent as vaccine prepared from first-growth scabs. The variation in immunizing value of different lots of vaccine would, therefore, appear to be due to variation in the virus produced by different lots of fowls rather than to a variation between first and subsequent growths of scabs on the same fowls.—Report of the Veterinary Science Division, College of Agriculture, and the Agricultural Experiment Station of the University of California, 1919-1920.

MARE WITH TETANUS HAS COLT.

On May 10 I was called to see a 12-year-old grade Percheron mare, and found her with a well-developed case of tetanus. Upon being informed that she was due to foal in 10 days, my prognosis was naturally very unfavorable. However, she was given treatment, consisting



Twelve Year-Old Grade Percheron Mare with Mule Colt, which Was Born while the Mare Was Afflicted with Tetanus.

of antitoxin and sedative drugs, and did as well as could be expected.

I was fearful as to what might happen at foaling time, but to my surprise she gave birth to a good mule colt right on time and without aid.

The picture was taken when the mule was a week old and the symptoms had begun to subside, although they can still be plainly seen. This case is unusual to me in the fact that the mare foaled right at the time when the symptoms were at their height and without help. Both mare and foal are doing fine at this time.—W. A. Beard, D. V. M., Greenview, Illinois.

The Haver-Glover Page

PUBLISHED EVERY NOW AND THEN IN THE INTERESTS OF GRADUATE VETERINARIANS.

BIOLOGICAL THERAPY EFFICIENCY

There are but two real factors incident to the belief of the inefficiency of biological products, with especial reference to bacterial vaccines or bacterins, and these are wrong diagnoses and the products themselves.

Regarding the former, the blame is not always on the man who makes the diagnosis, but rather on the man or concern who has made the diagnosis for him or has advanced a theory or other logic, by which the veterinarian is guided, naturally, because of his faith in the man or institution in which he puts his trust.

When it comes to the products themselves, inefficiency is most often due to the attempt at specificity or perhaps in a mixed product containing but a few species of organisms. Either being so narrow in their scope of usefulness that chances are against their producing any results because the disease producing organisms may not be represented in the product administered, and to the promiscuous sale to and administration by men not qualified to handle such products intelligently.

If all commercial institutions thought efficiency and field results only, there would be fewer state institutions attacking the lack of efficiency of commercial products. Furthermore, fewer veterinarians and livestock owners would feel that bacteriological therapy is lacking in value.

Again, if all commercial concerns confined the administration of their products to Graduate Veterinarians who by their training are best enabled to make correct diagnoses and properly administer biological products, the general opinion of the efficiency of biological products would become recognized, and the survival of the fittest would be the result. As a rule, the Graduate Veterinarian will buy only what he wants, while the other fellows buy what they can get.

Results are in accord with the use or abuse of diagnosis, products and ethics.

HEMORRHAGIC SEPTICEMIA

Pathologically speaking, hemorrhagic septicemias have existed in numerous localities in the last six weeks, but from causes other than B. Bipolaris Septicum infections. We have examined material from cattle, swine, horses and chickens and except in one instance, and that in chickens, we failed to prove the existence of B. Bipolaris Septicum as a pathological invader, even by compliment fixation tests.

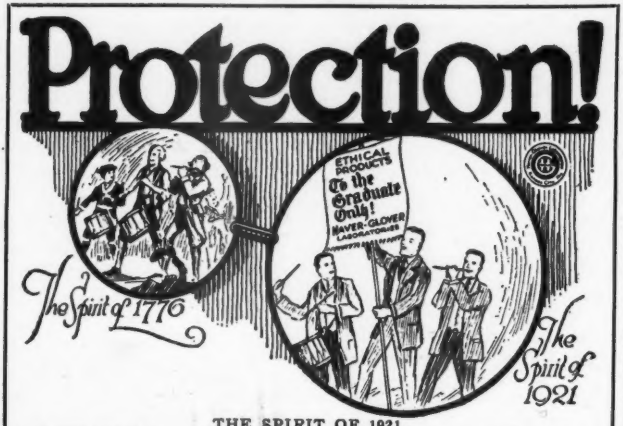
The foregoing is offered in contradiction of the general belief that hemorrhagic lesions constitute sufficient evidence for a diagnosis of "Hemorrhagic Septicemia" which, in the minds of many veterinarians, means B. Bipolaris Septicum infection.

Please note that, as stated, the bipolar organism was not incriminated as a pathological invader. This does not mean that this organism was always absent. To the contrary, it is usually present in some of the tissues because it is a normal habitat of all domestic animals regardless of health.

It is our opinion that unless this organism gains a virulence sufficient to enter the blood stream as a septicemic organism, it is of as little consequence as a pathologic disturber as the hay bacillus which we also find in respiratory, intestinal tracts, etc., of all animals.

Again, when this organism is encountered in the blood stream of diseased animals it is rarely, if ever, found alone, and streptococci are the usual associates.

Many diagnoses of so-called Hemorrhagic Septicemia are made because B. Bipolaris Septicum are found in tissues. It is advisable to think twice and act three times before accepting any such logic. All septicemias produce hemorrhagic lesions and many pathologic bacteria are capable at times of entering the blood stream as septicemic invaders. Keep this in mind and do not be deceived by any "NAME."



THE SPIRIT OF 1921.

THE TIME has come when firms should no longer straddle the fence. A definite policy should be adopted, either to cater to, and protect the licensed Graduate Veterinarian or state definitely and honestly that advertising to "The Veterinarian Only" includes all men licensed by a state—Graduates and non-graduates.

Today "For the Graduate Only" means the confining of sales and all co-operation to the men who have graduated from recognized veterinary colleges by hard knocks and the expenditure of much time and money.

"To the Veterinarian Only" includes the whole veterinary public, too often, if not always, a misleading influence.

Consider this seriously, and, if you really care, align yourself with a concern that does protect your professional interests.

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In sending that first order try to give us this information.

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Perhaps the best and truest thing that has ever been said about Glover's Mixed Infection Vaccines is that you seldom hear anything but good things said about them.

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(The many complimentary expressions we have received pertaining to our catalog are indeed gratifying and we must say, greatly appreciated by the authors.)

Matters of Current Interest

U. S. ARMY VETERINARY SCHOOL GRADUATES CLASS OF 18.

The Veterinary School of Meat and Dairy Hygiene of the U. S. Army at Chicago, which with this last graduating class has been made a permanent department of the army, on June 15 conferred "Certificates of Proficiency" on seven officers and 11 enlisted men. The officers are of the Veterinary Corps and the enlisted men are of the Medical Corps.

The following received certificates: Major William A. Sproule, V. C.; Major Walter Fraser, V. C.; Capt. Edward I. Cheely, V. C.; Capt. Aquila Mitchell, V. C.; Capt. Herbert S. Williams, V. C.; First Lieut. Everett C. Conant, V. C.; Second Lieut. Oscar C. Schwalm, V. C.; Sgt. Joseph L. Atkinson, Sgt. Lee G. Cook, Sgt. Arthur Lexau, Sgt. Richard W. Stelley, Cpl. Levi J. Hardy, Cpl. Henry L. Parker, Pvt. 1/c Earl L. Miller, Pvt. 1/c James E. Roush, Pvt. Frank Japcynski, Pvt. George McDessy, Pvt. William A. Trowbridge.

The graduating exercises were presided over by Major Geo. A. Lytle, Senior Veterinary Instructor, who among other things gave a history of the school. Lt. Col. Edmond R. Tompkins, Commandant of the school, conferred a "Certificate of Proficiency" upon each candidate.

PROGRAM FOR ILLINOIS VETERINARY MEETING.

The Illinois State Veterinary Medical Association summer meeting will be held in Peoria July 6-7. The first session will be called to order in the Woman's Building at 9:30 Wednesday morning, and following the report of Field Secretary J. I. Gibson, papers will be presented by W. J. Martin on "Progress of Veterinary Science," and Prof. T. S. Townsley, Poultry Department, Missouri State University, on "Breeding, Selection and Culling of Poultry."

Botulism will be discussed Wednesday afternoon, the session opening with a symposium on "Bovine Botulism" by Franklin Adams, Peoria; W. H. Feary, Oregon; A. M. Meade, Decatur; D. L. Cecil, Seymour; J. U. Spencer, Harrisburg, and C. E. Fidler, Canton. Other papers to be presented at this session include "Avian Botulism," by Glen R. Browne, Hoopeston; "Porcine Botulism," by C. A. Cox, Fithian, and F. E. Brown, Blandinsville; "Equine Botulism," by L. J. Miller, Waterloo; discussion by Robert Graham, Urbana; "The Most Recent Experiments with the Lucilia Caesar Larvae," by E. W. Saunders, Washington University, St. Louis; "Avian Tuberculosis," illustrated with lantern slides, by H. R. Schwarze, Kansas City, Kan.; "Cutaneous Bovine Tuberculosis," by L. Enos Day, U. S. Bureau of Animal Industry, Chicago.

The Thursday morning session will be held at the National Stock Yards, Peoria, in connection with the Faber Packing Company, where ample facilities will be provided to accommodate those in attendance regardless of weather conditions. There will be examinations of cattle that have been subjected to the intradermal and ophthalmic tests, and the application of such tests will be demonstrated. "The Intradermal Tuberculin Test and the Practitioner" is the title of a paper to be presented by A. T. Peters, Springfield, while J. J. Lintner, Chicago, will discuss examinations for accredited veterinarians and autopsies on reacting cattle conducted under the supervision of the Bureau of Animal Industry.

VETERINARY MILITARY SERVICE DISCUSSED IN NEW YORK.

The regular monthly meeting of the Veterinary Medical Association of New York City was held May 2 in the New York State Veterinary College. The program included a paper on "Functions of a Mobile Veterinary Section in the U. S. Army, and the Exhibition of a Battle Flag," by Dr. George J. Goubeaud, of Flushing, N. Y.; report of the state meeting recently held at Harrisburg, Pa., by Dean Hoskins, and case reports, etc.

Dr. Gaubeaud's paper proved of such interest that for more than two hours the former veterinary officers present told in a conversational way the many unusual occurences that happened during the trying months that the nations of Europe were literally at each others throats. Dr. Goubeaud began his address by

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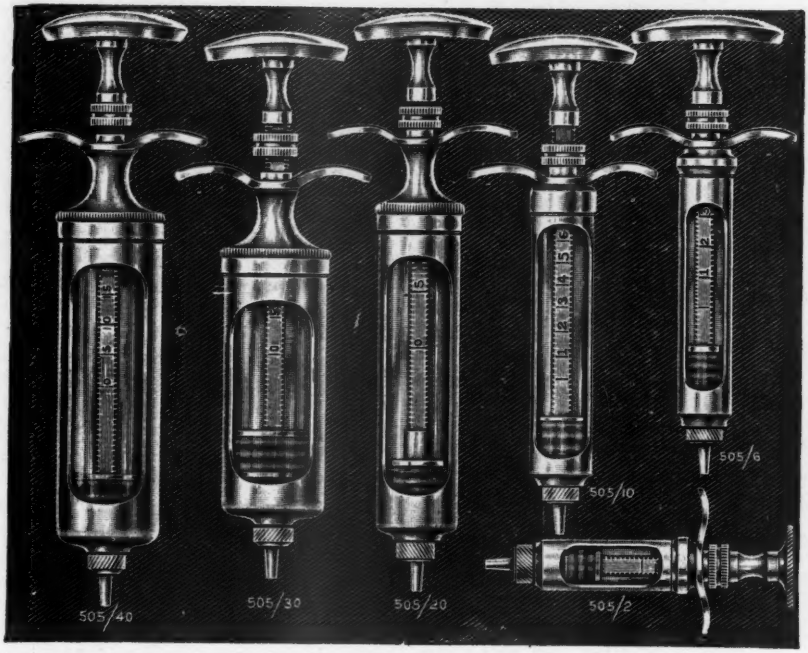

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LISTEN TO THIS—

At a recent Illinois meeting two veterinarians were talking about vaccination conditions.

"By the way," said one "Dr. ____ tells me that he never has any vaccination troubles."

"Oh, I don't know about that. Nearly all of us have trouble once in a while," replied the second veterinarian.

*"But," came back the first speaker, "**you must remember that he gets his serum from THE PEORIA SERUM COMPANY.**"*

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explaining the duties of a veterinary officer and how they varied at different points.

The veterinary officer at the front examined sick and injured animals, gave them first aid, and such animals as would appear to warrant treating were then sent back to the base hospital while the animals that were so injured or so sick as to indicate prolonged illness or doubtful recovery were destroyed. He described in detail the handling and shipping of such animals to the lines in the rear. One man under the stress of necessity by properly arranging and tying the animals was able to move an unbelievable number of horses, providing he kept off the main roads where traffic was congested. When Dr. Goubeaud was in command in Belgium the orders were to skin all dead horses and mules, but many were so badly torn as to make their hides of no value.

Among the many interesting things the doctor told was that horses and mules injured by shell would usually become "gun shy," being practically unmanageable as soon as they would hear the hum of an airplane.

The hardships under hurriedly provised camp life and the horrors and fears caused by bursting shells near one are things not easily forgotten, even though the fact is not always admitted by those who experienced such dangers.

Dr. Goubeaud has been more or less interested in military affairs for many years and is quite familiar with such matters. He explained the present arrangement of military service in the regular army and it is his opinion that the present status of the veterinarian is a decided improvement over the past.

Drs. Clayton, Ticehurst and McKim were called upon to take part in the discussion, and the information they dispensed would indeed have been of decided advantage to a committee seeking information on practical points of the needs of veterinary military service. It may be recalled by some of our readers that Dr. McKim had a long visit with the Germans in the bottom of a submarine after the transport in which he was crossing the ocean had been torpedoed.

Before adjourning the secretary read a letter of appreciation from Mrs. Cochran and her daughters thanking the association for the floral tribute and the resolution that had been sent the family.—J. F. DeVine.

Dr. W. J. Cleveland has located at Marathon, Iowa.

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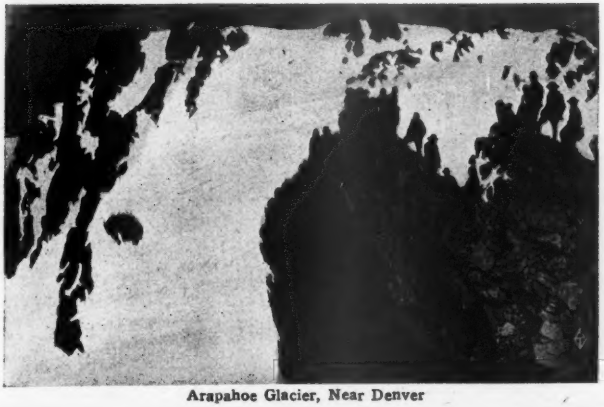

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My placing this preparation on the market, now, for the first time is not the result of hasty conclusions because it has served me so well, but I am offering it to the profession only after exhaustive consultations with the most eminent authority in America on veterinary materia medica.

This remedy is composed of ethyl nitrite, salicylic acid, oil of cajuput, fluid extract capsicum, fluid extract ginger, camphor, rectified oil of turpentine and mineral oil. The dose is eight ounces, to be repeated every hour, in severe cases, until relief is evident. Two to four quarts should effect a recovery. The first case treated will convince you of its superior merits.

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O N J

DOCTOR TO STUDY POULTRY PROBLEMS IN EUROPE.

Dr. B. F. Kaupp, Raleigh, N. C., has been elected by the State Board of Agriculture of North Carolina as a representative of the poultry industry of that state at the World's Poultry Congress and the World's Exhibition to be held at The Hague Sept. 5-13, 1921. He will leave New York July 5, going first to Southampton and then to London. At the latter city he will attend the annual assembly of the British Poultry Parliament. Later he will go to Sussex and Lancashire to visit places of interest in connection with the poultry industry. He will also inspect the various veterinary schools and research laboratories.

Dr. B. F. Kaupp.

At the annual poultry conferences at the Harper Adams Agricultural College at Newport, Salop, England, Dr. Kraupp will read a paper on the subject of his poultry pathological work. Dr. Kaupp will also go to Scotland, Denmark, and France. From France he will go to The Hague by way of the Flanders battlefields.

Representatives from more than twenty countries will attend The Hague meeting. Dr. Kaupp will there read a paper on the subject of "Bacteriological Study of Abscesses of the Feet of Hens." Following the world congress Dr. Kaupp will attend a meeting of the International Association of Instructors and Investigators in Poultry Husbandry. He will return to the United States late in September.

Capt. J. R. Shand, well-known army veterinarian, was married at Detroit May 4 to Miss Louise O. Schwender. Capt. and Mrs. Shand are now residing at 153 Berkley Place, Brooklyn, N. Y.

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KANSAS CITY KANSAS

OLEAGINOUS APPLICATION KILLS SWINE.

(Continued from page 46)

I have been using Aurora serum exclusively for the past six or seven years and the deaths of these six pigs is the only fatality during that time except in sick herds.

There were no swellings. The owner stated on being questioned, that he could see nothing unusual, no frothing at the mouth or anything else, only that they just died. I asked about the swellings, thinking we might be dealing with malignant edema, but he said he could see nothing indicating any reason for death. I was busy and he had burned the carcasses before I knew about the deaths, so there was no chance for postmortem examinations.

I would like your opinion in this matter if my description and history will permit you to arrive at any definite conclusions. At any rate give me the best information possible.—C. W. B., Illinois.

Reply—You have clearly described a very interesting occurrence. In our judgment the sprinkling with the combination of stock dip, coal oil and mobil oil was responsible for the loss of the six pigs that you had immunized. It is common knowledge that in the summer time great care must be exercised in dipping cattle or other animals in oils and then exercising them, and particularly while there is bright sunshine. If these precautions are not taken, it is not extraordinary for a large percentage of the animals to die, apparently of heat exhaustion, and it is my judgment that this was the cause of the death in the six pigs that you mention. The oil prevents the heat loss by radiation or evaporation of sweat and causes insolation.—A. T. K.

Dr. Thomas E. Robinson of Westerly, R. I., has been appointed to the office of state veterinarian of Rhode Island to take the place of Dr. J. S. Pollard. Dr. Pollard resigned at a recent meeting of the Live Stock Board. Dr. Pollard served in office for many years and was regarded as a faithful, efficient executive. His successor, Dr. Robinson, is popular with the practitioners of the state and a successful career in the state veterinarianship is predicted for him.

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VIRGINIA VETERINARIANS TO HOLD CONVENTION.

The Virginia Veterinary Medical Association will hold its twenty-seventh annual convention in Roanoke, Va., July 14-15. Among the speakers and their subjects will be the following: "Animal Parasites," by Dr. H. B. Ransom of the Bureau of Animal Industry; "Poultry Diseases," by Dr. B. F. Kaupp, Raleigh, N. C.; "Accredited Herd Work," by Dr. R. E. Brookbank, B. A. I., Richmond, Va.; "The Three Tuberculosis Tests," by Dr. J. G. Ferneyhough. The subjects of "Angus Cattle in Virginia," "Duroc Hogs in Virginia," and "Dairy Cattle in Virginia" have been assigned and will be open for discussion. Col. T. Gilbert Wood of the Norfolk & Western Railway will address the meeting.

The state board will conduct its regular annual examination in Roanoke on July 14.—William G. Chrisman, Secretary.

The largest attended, the most important and successful bovine tuberculosis eradication meeting ever held in the East was held in Boston, Mass., June 22-24. This meeting brought together federal and state employes engaged in co-operative work in New England, veterinary practitioners, representatives of the live stock industry, members of the Massachusetts Division of Animal Industry and members of the Massachusetts Veterinary Association. The sessions were held in the Auditorium at the State House.

Representatives from the Bureau of Animal Industry on the program included Drs. Mohler, Dorset, DeFosset, Kiernan, Schroeder, Ryder and Conley. Dr. F. Torrance, veterinary director general of Canada, was a speaker, as was also Dr. John F. DeVine of Goshen, N. Y. Dr. Milton J. Rosneau of the Harvard Medical School and prominent live-stock sanitarians of the East delivered papers.

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Dr. H. A. Jasme, Savannah, Ga., has received a commission as first lieutenant in the Veterinary Corps, First Field Artillery, Georgia National Guard.

—o—

Dr. Frank Weishaar, graduate of the New York State Veterinary College at New York University, class of 1921, was awarded the factulty gold medal for the best general average in examinations.

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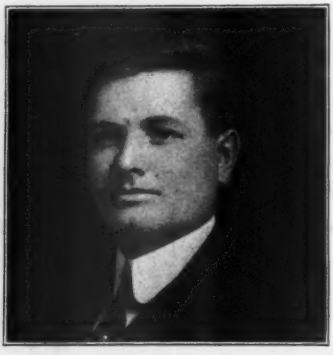
MONTANA VETERINARIANS TO MEET.

The fourteenth annual meeting of the Montana Veterinary Association will take place in Bozeman, Mont., on July 29-30. The outstanding feature of the meeting will be a clinical demonstration and address on "Sterility" by Dr. B. T. Sims of Corvallis, Ore.—N. T. Gunn, secretary-treasurer.

The United Serum Co. of Kansas City has announced the acquisition of Dr. R. H. Schwarze, for a number of years connected with the experiment station of the University of Illinois at Urbana. Dr. Schwarze will be in charge of a diagnostic laboratory to be established by the United company.



Dr. R. H. Schwarze.

G. R. Tinkham, formerly manager of the Corn States Serum Co., is now in charge of the United company's interests in Omaha.

Dr. Elmer Johnston has moved from Columbus, Ohio, to Kansas City where he assumed the sales management of the United Co. Dr. H. H. Fairbank has taken Dr. Johnston's place in Columbus.

Dr. H. C. Utley has resigned his position with the American Veterinary Supply Co. to take charge of the United branch at Waterloo, Iowa.

—o—

Dr. Louis Allen Somer, class of 1921, New York State Veterinary College of New York University, was awarded the alumni prize, consisting of a set of books on veterinary subjects, for an essay read at the students' association.

—o—

Non-graduate veterinarians of Kentucky will hold a meeting at Mayfield, July 18.

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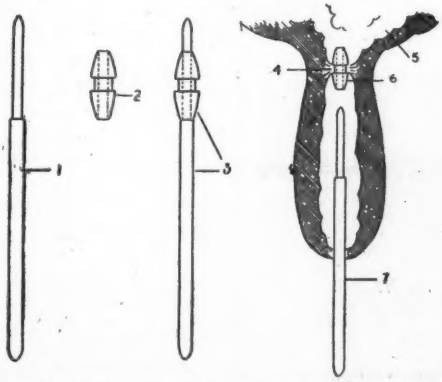
1—Teat trochar used to open up canal and for introducing canula into position. Shoulder on trocar to prevent canula from binding, thus facilitating withdrawal.

2—Self-retaining teat canula.



3—Self-retaining teat canula and trochar ready for use.

4—Stricture

5—Milk sinus.

6—Canula in position, showing how the stricture acts to hold it in position.

7—Trochar being removed after releasing canula.

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A real new, practical, worth while instrument. Made in two sizes, one for large and one for small teated cows. Price complete, either size, $3.00—Specify size wanted. Price of canulas per dozen $2.75. Canulas made of sterling silver. Price of trocars, each 50 cents. Mail orders direct to

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THE EAGLE CO

Dr. R. E. Naylor who recently accepted the sales management of the American Veterinary Supply Company of Kansas City, Mo., is numbered among the best and most popularly known veterinarians of the Middle West.

Dr. Naylor is a graduate of the Kansas City Veterinary College, class of 1907. For a number of years he was in the B. A. I. service, at one time being in charge of the government inspectors at the Union Stock Yards in Denver, Colo. Prior to going with the American Veterinary Supply Co., Dr. Naylor was associated with the Denver Hog Serum Co. His numerous friends predict success for him in his newly chosen field.

Dr. R. E. Naylor.

—o—

Dr. A. W. Whitehouse, anatomist at the Colorado Agricultural College, veterinary department, is in England to take a special course in the veterinary school of the University of Liverpool. He will study the French system of teaching anatomy. Later he will go to Oxford to study the British system and qualify for the M. R. C. V. S., and M. A. degrees. He has been granted a year's leave of absence by the Colorado college.

A TRIBUTE TO DR. JAMES LAW.

(Continued from page 33)

D. White. He held this position as head of the veterinary department until the opening of the New York State Veterinary College in 1896, when he was made its director, which position he held until 1908 when he retired as emeritus professor. He lived the remaining years of his life on the campus.

Dr. Law was a gentleman in every sense of the word. He was of a retiring disposition, a thorough student and positive in his convictions. His purpose in life was the advancement of a cause, not self. He detected the great truths of the science of medicine; yea, he has helped to bring many of them to light, and, like Pasteur, he recognized the great horizons beyond the facts. Again he may be compared to the great French savant in that the magnitude and munificence of his work have ever stood in the front, shadowing the man. He was active in civic and university matters and a Baptist in his church affiliation. Dr. Law was a man to whom the inscription above the entrance to Pasteur's tomb might justly be applied. "Happy the man who bears within him a divinity, an ideal of beauty, and who obeys it; an ideal of art, an ideal of science, an ideal of country, an ideal of the virtues of the Gospel." After a brief illness, Dr. Law died May 10, 1921, ripe in years and blessed for his many good works.

The Northern San Joaquin Valley Veterinary Medical Association is a new organization which grew out of the enthusiasm of the San Joaquin Valley Veterinary Medical Association meeting, which was held in Modesto, Calif., May 3.

The need of this organization was felt because of the long distances necessary for the veterinarians to travel who are located at either end of the valley, when they desired to attend a meeting of the San Joaquin Valley Association. The meeting to organize the new association was held May 25 at the Modesto Veterinary Hospital in Modesto, at which the name was officially adopted and the following o cers elected: Dr. W. F. Haney, president; Dr. Thomas, first vice-president; Dr. Roberts, second vice-president, and Dr. R. A. Ball, secretary-treasurer.

The meetings will be alternated between the various cities and towns of the district. A regular meeting was held at Stockton on June 22.

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ASSOCIATION MEETINGS

The information given below is up-to-date and has been furnished by the secretaries of the various associations listed. Secretaries are requested to furnish us data regarding their association after each meeting; otherwise the association will necessarily be dropped from the list. We trust the secretaries will co-operate with us in keeping before the members of their associations the date and place of the next meeting.

ASSOCIATION	PLACE	DATE	SECRETARY
Alabama Vet. Med. Assn...	Auburn, Ala.....	.....	A. Cary, Auburn, Ala.
American Vet. Med. Assn.....	Denver, Colo.....	Sept. 5-9, 1921.....	N. S. Mayo, 4753 Ravenswood Ave., Chicago
British Columbia Vet. Assn...	Seattle, Wash.....	July 14-15, 1921.....	Kenneth Chester, 310 Warren Ave., New Westminister
California State V. M. A...	Fresno, Cal.....	June, 1922	J. P. Bushong, 112 Normal Hill Center, Los Angeles.
Central Can. Vet. Assn.....	Ottawa, Ont.....	.....	A. B. Wickwire, 1031 Carling Ave., Ottawa, Can.
Central Mich. Vet. Soc....	.....	.....	W. N. Armstrong, Concord, Mich.
Central Neb. Vet. Assn.....	Kearney, Neb.....	Sept., 1921.....	L. B. Wolcott, Shelton, Neb.
Central N. Y. Vet. Med. Assn.	Syracuse, N. Y.....	June and Nov., 1921.....	W. B. Switzer, Oswego, N. Y.
Chicago Vet. Soc.....	Chicago.....	Second Tuesday of each month	J. B. Jaffray, Chicago, Ill.
Colorado Vet. Med. Assn...	1525 Curtis St., Denver, Colo.....	.....	I. E. Newsom, Fort Collins, Colo.
Conestoga Vet. Club.....	Lancaster, Pa.....	Second Thursday each month	H. B. Brady
Connecticut V. M. Assn.....	New Haven, Conn...	.....	G. E. Corwin, 99 Ann St., Hartford, Conn.
Eastern Iowa Vet. Assn.....	Cedar Rapids, Ia....	.....	J. Wolfe, Grand Mound, Ia.
Genesee Valley V. M. Assn....	Rochester, N. Y.....	.....	F. E. Cleaver, Avon, N. Y.
Georgia State Vet. Assn....	Macon, Ga.....	Between Sept. 8-15, 1921...	P. F Bahnsen, Americus, Ga.
Hudson Valley V. M. Assn....	Rhinebeck, N. Y....	.....	W. H. Kelly, 233 Western Albany N. Y.
Illmo. V. M. Assn.....	Nat'l Stock Yds...	.....	J. E. Jennings, Nat. Stk. Yds., Ill.
Illinois S. V. M. Assn.....	Peoria, Ill.....	July 6-7, 1921.....	D. M. Campbell, 9 So. Clinton St., Chicago
Indiana V. M. Assn.....	Indianapolis.....	.....	E. T. Davis, Plainfield, Ind.
Iowa Vet. Assn.....	Ames and Des Moines	.....	H. D. Bergman, Ames, Iowa
Kansas V. M. Assn.....	Salina, Kans.....	.....	W. J. Guilfoil, 221 N. 17th St., Kansas City, Kansas
Kentucky V. M. Assn.....	Danville, Ky.	July 6-8, 1921	C. W. Fisher, Danville, Ky.
Louisiana Vet. Med. Assn..	.....	.....	E. P. Flower, Baton Rouge, La.
Maine V. M. Assn.....	Bangor, Me.....	.....	P. R. Baird, Waterville, Me.
Massachusetts V. A.....	Boston, Mass.....	Fourth Wednesday ofmonth.	H. W. Pierce, West Medford, Mass.
Michigan S. V. M. A.....	East Lansing, Mich..	.....	R. A. Runnells, East Lansing, Mich.
Minnesota S. V. M. A.....	Hutchinson.....	July 14-15, 1921.....	C. P. Fitch, University Farm. St. Paul
Mississippi Valley V. M. A..	.....	.....	W. L. Hollister, Avon, Ill.
Mississippi S. V. M. Assn....	Canton, Miss.....	.....	J. A. Barger, Jackson, Miss.
Missouri Valley Vet. Assn.	Omaha, Neb.....	July 12-13, 1921	R. F. Bourne, Ft. Collins, Colo.
Missouri Vet. Med. Assn..	St. Louis, Mo.....	June 28-30, 1921.....	C. D. Folse, 4018 Harrison, Kansas City, Mo.
Natl. Assn. of B. A. I.....	Meet with A. V. M. A.	.....	S. J. Walkley, Milwaukee, Wis.
Nebraska S. V. M. Assn.....	Grand Island.....	.....	C. J. Norden, Lincoln, Nebr.
Nevada State Vet. Assn.....	Reno, Nevada.....	.....	S. Lockett, Reno, Nev.
New York S. V. M. Soc.....	Buffalo, N. Y.....	July 27-29, 1921.....	C. E. Hayden, Ithaca, N. Y.
North Carolina S. V. M. A..	Wrightsville Beach.	June 29-30, 1921.....	J. P. Spoon, Burlington, N. C.
Northern San Joaquin Valley V. M. A.	.....	.....	R. A. Ball, Modesto, Calif.
Ohio St. Vet. Med. Assn..	Columbus, Ohio....	.....	R. I. Bernath, Wauseon, Ohio
Okla. St. Vet. Med. Assn..	Oklahoma City.....	July 12-13, 1921.....	H. W. Ayers, Oklahoma City.
Ontario Vet. Assn.....	Toronto, Ont.....	Aug. 11, 12, 1921.....	J.S. Glover, 296 George St., Toronto.
Oregon V. M. Soc.....	Seattle, Wash.....	July 14-15, 1921.....	B. T. Simms, Corvallis, Ore.
Pa. State Vet. Med. Assn.....	Harrisburg, Pa.....	January, 1922	R. M. Staley, P. O. Box 1404, Philadelphia, Pa.
Philadelphia Vet. Club.....	Philadelphia.....	Fourth Tuesday of month.....	C. S. Rockwell, 5128 Chestnut, Philadelphia
Prince Edward Isl. V. M. A.	Charlottetown, Can.	.....	W. G. Church, Summerside, P. E. I., Can.
Schuylkill Val. V. M. A....	Reading, Pa.....	.....	R. L. Burger, Hamburg, Pa.
Southern Cal. V. M. Assn.....	Los Angeles.....	Third Wednesday of month...	J. P. Bushong, Los Angeles.
Southeastern Mich V. M. A....	Detroit, Mich.....	Second Wednesday, January, April, July, October.....	H. P. Hoskins, Box 471, Detroit, Mich.
Southeastern St. V. M. A...	Spartanburg, S. C..	.....	J. L. Handley, Atlanta, Ga.
Southern Tier V. M. A.....	Elmira, N. Y.....	.....	R. R. Birch, Ithaca, N. Y.
Tennessee V. M. A.....	Knoxville, Tenn....	.....	J. M. Jones, Lewisburg
Utah S. V. M. Assn.....	Salt Lake City.....	October, each year.....	E. A. Bundy, Ogden
U. S. Live Stock San. Assn.	Chicago, Ill.....	Nov.-Dec., 1921.....	T. A. Burnett, Columbus, Ohio
Vermont Vet. Med. Assn.....	Montpelier, Vt.....	.....	Geo. Stephens, White River Jct.
Vet. Assn. of Alberta.....	Calgary, Alta.....	September, 1921.....	T. E. LeClaire, 110 6th Ave. E. Calgary
Vet. Assn. of Manitoba.....	Winnipeg, Man.....	.....	J. B. Still, 711 Boyd Bldg., Winnipeg
V. M. Assn. of New York City	338 E. 26th St.....	First Wednesday of month....	J. E. Crawford, Far Rockaway
Va. S. V. M. Assn.....	Roanoke, Va.	July 14-15, 1921	W. G. Chrisman, Blacksburg, Va.
Wash. State Col. V. M. A.....	Wash. State College	Second and Fourth Tuesday of Month.....	S. Worley, College Sta.
Wash. S. V. M. Assn.....	Seattle, Wash.....	July 14-15, 1921.....	C. Cozier, Bellingham
West Virginia V. M. A.....	Parkersburg, W. V.	July 7-8, 1921	C. L. Higginbotham, Charleston.
Western N. Y. V. M. Assn....	Hamburg, N. Y....	July 14, 1921	F. F. Fehr, 243 S. Elmwood, Buffalo.
Western Pa. Vet. Club.....	Pittsburgh	Third Tuesday of month.....	Fred Weitzel, Pittsburgh
Wisconsin V. M. Assn.....	Madison, Wis.....	.....	W. A. Wolcott, Madison, Wis.
York Co. V. M. Soc.....	York, Pa.....	First Tuesday March, June, September, December.....	E. S. Bausticker, York, Pa.

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Dr. and Mrs. John Blattenberg of Lima, Ohio, sailed June 1 for Europe. Dr. Blattenberg is a delegate to the International Rotary convention to be held in Edinburgh, Scotland. After the convention they will visit London, Belgium, Paris, the battlefields of France and the Rhine River. They will also make trips to Switzerland and Italy.

—o—

The mid-summer meeting of the Kentucky State Veterinary Medical Association will be held in Danville July 6-8. The United States Bureau of Animal Industry examination covering government accredited herd work will be held at Danville on the dates of the meeting.

—o—

Dr. William Hooten has moved from Arcola to Danville, Ind. Dr. I. W. Allen of Redmon, Ind., has taken over Dr. Hooten's Arcola practice.

—o—

Dr. George W. Butterfield and Mrs. Laura E. Howe were married at Ontonagan, Mich., April 7.

—o—

Dr. P. T. Tweed is now city veterinarian of Lebanon, Ore. The office was created at a recent meeting of the city council.

WHO IS THIS STATE VETERINARIAN?

The above represents the likeness of a well-known state veterinarian, when he was a lad of 8 years. A year's subscription to VETERINARY MEDICINE will be given to the first reader sending in the correct name and address.

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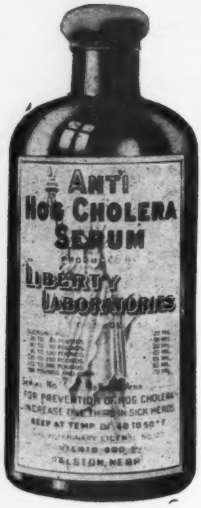

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B. B. Bowen, D. V. M., Lab. Supervisor. — Carl J. Norden, D. V. M., Sales and Service
J. S. Koen, D. V. M., Special Representative

Dr. R. M. Gow, state veterinarian of Arkansas, is now at Raton, N. M., where he will remain for at least a year in an effort to regain his health. Dr. Gow went to Golden, Colo., last year. His stay there benefited him greatly. From Golden he returned to his home in Little Rock. He tendered his resignation as state veterinarian to the Live Stock Commission but that board refused to accept it. He was granted a year's leave of absence and will spend the time in Raton before returning to Little Rock.

—o—

The Missouri Valley Veterinary Medical Association's summer meeting will be held in Omaha under dates of July 11, 12 and 13. An unusually attractive program has been prepared for the sessions and a record-breaking attendance is anticipated.

—o—

Dr. Seth Law has opened a new veterinary hospital in Loomis, Calif. A public dance was given in the hospital the evening it was formally opened.

—o—

Officers of the West Virginia Veterinary Medical Association anticipate the biggest and best meeting held in the history of the organization this year. The annual meetings are held the first week in July. This year the sessions will take place at Parkersburg under dates of July 7 and 8.

—o—

Twenty were graduated from the veterinary department of the Colorado Agricultural College at Fort Collins this year.

—o—

Members of the Western New York Veterinary Medical Association meet this year at Hamburg, N. Y. The date is July 14. The meeting will be of more than ordinary interest and importance. A special invitation has been extended to the ladies to attend.

—o—

Drs. F. L. Pieper and G. J. Wulff, graduates of McKillip Veterinary College, class of 1918, are now practicing in Elgin, Ill.

—o—

Dr. R. C. Julien of Delphi has been named State Veterinarian of Indiana by the Live Stock Sanitary Board. He succeeds Dr. L. E. Northrup. Dr. W. B. Craig of Indianapolis was named assistant State Veterinarian.

—o—

Dr. J. W. Henagan has moved from St. Matthews to Orangeburg, S. C.

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We can also supply you with a preparation for collar and saddle galls that will give instant relief to the animal, please your client and add to your prestige.
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TO THE CATTLE PRACTITIONER: Are you one of those unfortunate veterinarians who has been disappointed or had his reputation injured by such a simple thing as a "dose of physic for a cow"? If not, do not lay yourself liable. If so, you will appreciate our Cattle Cathartic. After 25 years' experience and after observing its action on thousands of cases, we can offer you a safe, satisfactory saline cathartic, that contains carminatives and stimulants which eliminate danger and produces results. A package supplemented with stimulants works nicely in those cases caused by injudicious feeding. May be repeated as indicated.
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OTTUMWA SERUM COMPANY Ottumwa, Iowa

Major T. P. Spilman, Manager. Dr. G. H. Gillette, Chief Veterinarian.

Dr. J. A. Logan, a graduate of the Chicago Veterinary College, class of 1910, is under treatment at the Glockner sanitarium at Colorado Springs, Colo. Dr. Logan has been ill for a long time and is at the Glockner institution in an effort to regain his health. Friends and classmates of Dr. Logan who happen through Colorado Springs en route to the Denver A. V. M. A. meeting will be welcome visitors to Dr. Logan.

—o—

Sixty-four young men, representing one of the best classes in the history of the college, graduated from the Indiana Veterinary College at Indianapolis last month. Every one of the graduates had a location or position available before leaving school. From the many inquiries already received at the Indiana school, the indications are that the fall season will bring in a record-breaking number of new students.

—o—

The largest exclusive fish and oyster house in the United States is owned and operated by Dr. G. W. Pell, a 1909 graduate of the Kansas City Veterinary College. Dr. Pell's place is located in Denver. He expects to meet many of his former school mates who will attend the 1921 A. V. M. A. meeting in Denver.

—o—

Dr. Calvin C. Cole, well known in eastern veterinary circles, died May 17 at his home in Wilmington, Del.

—o—

Dr. Alex Harthill, one of the best known of the older veterinarians of the middle states, died a his home in Louisville, Ky., May 20. Dr. Harthill was 71 years old. For many years he was veterinarian in charge at the Latonia, Lexington and Louisville race tracks. Dr. Henry C. Harthill, practicing veterinarian of Louisville, is a son.

—o—

The following were graduated from the Washington State Veterinary College June 16: B. M. Ahr, Lewis J. Donnelly, John Gooding, Russell Isham, Kenneth McKay, Roy Mills, Larnardo Palicte, Frank Sanders, Peter Watzek, S. C. Whytock and Walter Thistlewaite.

—o—

Dr. C. C. Hall of the firm of Hall and Morris of Omaha, Neb., recently received the appointment of city veterinarian of Omaha.

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MONTREAL

AVOIDING TOXICITY FROM OIL OF CHENOPODIUM.

(Continued from page 54)

of chenopodium in doses of 20 to 40 minims, followed by one-half to one ounce of castor oil, it appears likely that the bad results are due to inadequate purgation and that the dose of castor oil should be increased. Where dogs are given oil of chenopodium, even in doses or 5 or 10 minims, the chenopodium should be followed by an ounce of castor oil. In the case of swine, small animals might be given as little as an ounce of castor oil, but large animals should be given from two to four ounces. So far as we can judge from the available evidence in regard to preliminary purgation, this measure gives no protection against the toxic effects of anthelmintics and it may possibly have the opposite effect. If you will increase the amount of castor oil administered with the chenopodium it will probably result in a decrease in the number of cases showing toxic effects.—M. C. H.

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Dr. George K. Bartholomew, a graduate of the University of Pennsylvania, class of 1916, died at his home in Pennsburg, Pa., recently. Dr. Bartholomew was a captain in the army service in the world war.

—o—

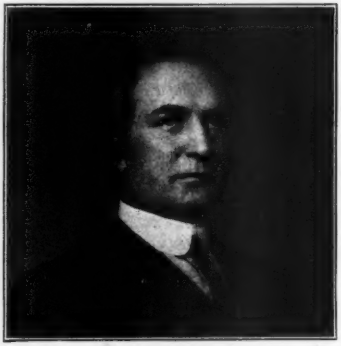
Dr. Isaac Howell died at his home in Lanark, Ill., recently.

—o—

Dr. J. W. Steinbrook has located in practice in Petaluma, Calif.

—o—

Dr. W. H. Simmons is the new state veterinarian of Kentucky, succeeding the late Dr. S. F. Musselman. Dr. Simmons graduated from the Ontario Veterinary College in 1892.



Dr. W. H. Simmons.

He practiced in Louisville for 20 years and for 17 years prior to accepting his present office was connected with the University of Kentucky.

—o—

Dr. Clarence Dunn has moved from Conway to Little Rock, Ark.

—o—

Dr. A. B. Haskins was recently appointed city milk inspector of Davenport, Iowa.

—o—

Dr. L. M. Russell has taken over the practice of Dr. L. M. Wright at Lowell, Wis.

—o—

Dr. William K. Scholten has moved from Inwood, Iowa, to Spirit Lake, Iowa.

—o—

Dr. G. J. Powell has moved from Auburn to Nunda, N. Y.

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ERRATA.

In the article entitled "Observations of Atypical Conditions in the Treatment of Hog Cholera," by Sidney D. Myers, as published in our June issue, a typographical error occurred on page 34 that may cause an erroneous conclusion to be drawn in regard to the value of hemorrhagic septicemia serum. In the second column, commencing near the end of the fourth line, the sentence: "all received the hemorrhagic septicemia serum, only one recovering" should read "all receiving the hemorrhagic septicemia serum except one recovered."

BOOK REVIEWS.

Diseases of the Genital Organs of Domestic Animals.

By W. L. Williams, Professor of Veterinary Obstetrics and Research Professor of the Diseases of Breeding Cattle in the New York State Veterinary College at Cornell University, with the collaboration of W. W. Williams, B. A., D. V. M., Springfield, Mass. 856 pages, 240 illustrations and 8 colored plates, Price $10. Published by the author, Ithaca, N. Y.

This book, which is a companion volume of "Veterinary Obstetrics" by the same author, is a pioneer in its line, as it is the only treatise in any language which considers comprehensively those defects and diseases of the genital organs and of the embryo and fetus which may imperil the physiological reproduction of young. The infections causing such phenomens as sterility, abortion, etc., and in newborn animals, dysentery and allied perils to life, are annually becoming of more acute importance to the breeder and to the state.

The infections of the genital organs of cattle have been taken as the standard, and over half the volume is devoted to their consideration, the genital infections of other species being dealt with, mostly by comparison, though specializing where necessary.

The author very properly starts off with a clear, concise consideration of the anatomy and physiology of the generative organs. In chapter 2 he discusses the clinical examination of the genitalia, both male and female, including the diagnosis of estrum and of pregnancy, and in chapter 3 he takes up the study of the artificial interferences with reproductive functions, the induction of estrum, artificial impregnation and artificial abortion. In chapter 4 there is discussed arrests and aberrations in genital development and in chapters 5 and 6, miscelleanous defects, derangements and diseases interfering with fertility and with reproduction; chapters 7 and 8, coital and parturient

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injuries; chapter 9, sodomy and sadism, this very important and yet much neglected feature in veterinary practice receiving considerable consideration in this chapter; chapters 10 and 11, noninfectious ailments (tumors, etc.) of the genitalia, followed by a discussion in great detail of the various infections of the genital organs, both venereal and non-venereal, of males and females, as well as their resulting sequalae in the young. It also deals at length with the systematic handling of herds for the control of genital infections.

This work is clearly the author's masterpiece. It contains very little of conjecture, which necessarily marked some of his earlier works, but its more than 800 pages are filled with straightforward statements of fact, put forth in an easy-flowing language, which makes it delightful and most instructive to read. This feature is aided by the book being printed in large clear type on most excellent dull-finished paper.

The work is indispensable to every veterinary practitioner and should prove likewise to those engaged in research work.—E. L. Q.

Swine Practice.

By A. T. Kinsley, M.Sc., D. V. S., author of "Veterinary Pathology," "Swine Diseases," etc. 374 pages, 120 illustrations and 4 colored plates. Price $4. Published by the American Veterinary Publishing Co., 9 South Clinton St., Chicayo, Ill. This book is No. 2 of the publisher's "Veterinary Practitioner's series."

Though bearing a different title this book is really a much-revised, much-improved and elaborated edition of "Swine Diseases" by the same author.

The increasing importance of swine practice demands increased efficiency, and the author has attempted and has accomplished in this work the fulfillment of this need. He has added chapters on the general care and management of swine, breeds of swine, feeds and feeding, surgical operations incidental to swine practice, and obstetrics. He has succeeded in briefly and clearly describing all phases of the management and diseases of swine in such a way that the student of veterinary medicine and the practitioner will find it a valuable ready reference. Municipal, state and Bureau of Animal Industry veterinarians will find it to be just the kind of work required by them in their department of the profession.

It is written in the inimitable style of Dr. Kinsley's method of talking or writing: plain, direct, explicit, easily comprehended and without equivocation; not an unnecessary word in it; this because the author appreciates the

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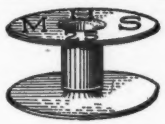

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The illustrations are profuse, remarkably fine and clear and do much in elucidating the text. No one engaged even to the smallest extent in swine practice can afford to be without it.—E. L. Q.

Microbiology.

Edited by Charles E. Marshall, Professor of Microbiology and Director of Graduate School, Massachusetts Agricultural College, Amherst, Mass., with the coelaboration of 25 contributors. Third edition, revised and enlarged; cloth, 1071 pages, 200 illustrations. Published by P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia, Pa. Price $4.

This is a very comprehensive and most commendable work on this subject. It is a book that will fill "that gap" in an ordinary well-selected library, as few veterinary libraries contain works so broad in its scope as this one. It lives up to its title in the broadest sense and just the book one needs to refer to in regard to a certain germ, molds, etc., inasmuch as it discusses bacteria of all varieties, molds, yeasts, protozoa, water, milk, light, electricity, growth, air, fermentation, sewage, soil, microbiology of milk and milk products, foods and food poisoning, microbiology of the diseases of man and domestic animals, immunity and susceptibility, manufacture of vaccines, antisera and other biological products, control of infectious diseases, microbial diseases of insects and plants, and a thousand and one other things that you will desire to know from time to time. In fact, it is a veritable encyclopedia of Microbiology.

It is printed on high-grade thin paper, in clear type and of a most convenient size. It is the sort of book one would desire to pick up to fill into advantage an odd half-hour.—E. L. Q.